

HARVARD STUDIES IN EDUCATION

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RELATIV FREQUENCY
OF
ENGLISH SPEECH SOUNDS

BY
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DEWEY SHORTHAND, ETC.



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The text of this investigation is speld in accord with the recommendations of the Simplified Spelling Board. In the material investigated the conventional spelling, as found, has been adhered to strictly thruout.

The fonetist and filologist has always been among the first to recognize the immense importance of the movement for reform of English spelling, which commands the united support of the leading language scholars both of England and America. He should be willing to bear his share of the prejudice which some must endure in the course of progress toward a rational orthografy.

Simpler Spelling Association, Lake Placid Club, N. Y., wil send ful information concerning this important movement on request.

INTRODUCTION

This investigation, based on a sufficient number and variety of modern texts, conducted on sound principles and with scrupulous care, aside from its obvious utility for shorthand and for instruction in reading, is of value to foneticians in that it affords abundant choice material for the study of the adjustment of sound to sound in the syllable. To the linguist it furnishes also a starting point for comparison of one language with another, in respect either to acoustic effect or to the characteristic operations of the vocal organs; and it provides, in its word list, a foundation for comparative estimates of current vocabulary as an index of national civilization. To one interested in the history of speech, or the history of thought, it suggests and facilitates a series of comparisons of present and past aspects of English, whether one consider the language as an aggregate of sound-patterns or as a medium of expression. Multiple are the uses to which these tables may be put. It is to be hoped that many scholars, in many fields, will avail themselves of them.

C H GRANDGENT

HARVARD UNIVERSITY
January, 1923

PREFACE

Study of the fonetic facts of English has been heretofore almost wholly qualitativ. Recently, to be sure, there has been a growing series of word counts, purporting usually to determin the most frequently occurring words of the language, but the more searching and for many purposes more significant investigation of the relativ frequency of sillables and of sounds has been quite neglected.

The principal educational use of such word lists thus far has been in connection with that short-sighted misdirection of effort which treats the symptoms insted of the disease of our present indefensible conventional spelling. For this and other more profitable purposes, however, accurate lists of the commonest words of English hav great value, and the present lists ar believd to offer 2 markt advantages. 1: A much greater diversity in selection of material analized givs much wider validity to the results. 2: The accuracy and significance of the lists ar not impaired by an indefinit "judgment factor" in the combining of derivativs and inflected forms. For certain purposes complete separation of all variant forms may be most useful, for others sistematic grouping of the derivativs of each root form; but there is no valid excuse for the usual practise of an indeterminate "personal judgment" mixture of the 2. This study presents both treatments, separately, and separately indext.

All of the quantitativ data on sillables and most of the data on simple sounds ar, so far as I know, unique and of great potential importance in several different fields of study and teaching.

In the pedagogy of writing, tipping, or shorthand the word lists hav great value, whether in providing material from which to organize a textbook or course of study, or in placing the emfasis most effectivly in using material

predetermined by other conditions. Lacking such data much wasted effort results from confusion between merely familiar words and words of genuinely common occurrence. In devising, and still more in testing or evaluating reading methods, the syllable and sound data also will be most significant—likewise in the problems of speech correction. Further and varied uses will readily suggest themselves to the educator familiar with the resources of these tables.

All data here presented are of the most fundamental importance for constructing a system of shorthand for general use, which must be in harmony with the fonetic facts of English. These data have been utilized to the fullest extent in devising both the structure and presentation of *Personal Shorthand*,¹ a scientific development of accepted shorthand principles, and of *Demotic Shorthand*,² a revolutionary shorthand experiment which abandons 2 of the most firmly established fundamental principles of English language shorthand—single stroke signs for simple sounds, and small signs for vowels—and in so doing achieves a unique and unprecedented simplicity. The primary purpose, indeed, in securing these data was their indispensable importance as the first foundation of any scientific study of shorthand problems, but particular pains were taken to avoid specializing the investigation to this end, for the increase in value for shorthand purposes would have been comparatively slight, while the more general value of the results for other fonetic, filologic, and educational purposes would have been materially reduced.

For the research laboratory of the engineering or manufacturing corporation dealing with such acoustic devices as the telephone or fonograf, these analytic quantitative data provide important material for study of the most efficient or effective transmission or reproduction of speech sounds.

^{1,2} Both superseded by the Dewey Shorthand series of textbooks, published by Dewey Shorthand Corporation, Lake Placid Club, N.Y.; distributed also by Pitman.

Finally, as Professor Grandgent has pointed out in his introduction, the establishment of reliable quantitative data as to the simple sounds and commoner sound combinations of English throws a new and valuable light on the studies of the fonetist, and affords material for a new and profitable field of investigation into the tendencies of language development.

In addition to the varied uses of the data here reported, the fonetic print alfabet itself, adapted from the Revised Scientific Alfabet for this investigation, and adopted subsequently by the Simplified Spelling Board for indicating pronunciation in its various publications, offers certain practical advantages in connection with the problem of fonetic spelling reform: in particular combining the least practicable degree of tipografic strangeness with that minimum degree of fonetic precision necessary for general popular use.

The clerical work of the investigation, which required more than 3,000 hours, was performed chiefly by 4 different assistants, at 3 different places — New York, Lake Placid Club, and Cambridge — at intervals during the past 4 years. Under the circumstances minor errors in the recording or manipulation of data have been inevitable. Where necessary or desirable for purposes of comparison, such errors have been reconciled in preparing this report. No such adjustment has affected any significant figure as much as .1 of 1%, and most have affected such figures less than .01 of 1%.

Particular acknowledgment is due my ablest assistant, Miss Frances Wilson, who performed much of the more difficult fonetic classification and tabulation of the original investigation, and subsequently assisted me with the final checking, revising, reconciling and copying of the greater part of the data here presented.

GODFREY DEWEY

CAMBRIDGE, MASS
January, 1923

PREFACE TO THE REVISED EDITION

In the 27 years since this study was first published, it has abundantly justified the closing lines of Professor Grandgent's introduction which appears on page v. Altho the modest first edition has been out of print for a dozen years, I have had reports of its use for as varied purposes at as widely scattered points as the teaching of English in Japan, the breaking of cipher codes in British India, developing an improved typewriter keyboard in Austria, the development of Zachrisson's Anglic [a form of world English spelling] in Sweden, and the development of Ogden's Basic English in Great Britain. All these are in addition to the more obvious primary purposes of the study in connection with my own shorthand construction and the problems of simpler spelling and phonetics. It may be added that both Pitman in Great Britain and Gregg in the United States have used this study, and quoted it as an authority, in the preparation or revision of shorthand textbooks.

My own constant use of these data over a series of years quickly revealed the considerable value of expanding Table 9 to show for each of the 1370 commonest syllables how often it occurred initially, medially, or finally in a word, or as a word by itself. This expansion has therefore been published in this revised edition as Appendix C. In addition, Appendix D gives two brief tables of *letter* frequencies; which, while falling outside the declared scope of the study, give a valuable check on the frequencies commonly assigned to the lower case letters in the printer's font, and provide an accurate and incontrovertible basis for estimating the saving to be effected by any proposed form of phonetic spelling for English.

So far as practicable, the errors discovered in the first edition have been corrected where they occur. Where the same error occurs in several places, or its correction would throw out column footings or cumulative totals, it has been identified by an encircled number referring to an errata sheet at the end of the volume.

GODFREY DEWEY

LAKE PLACID CLUB, N.Y.
January, 1950

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Part 1—Preliminary Discussion

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Part 1

Preliminary Discussion

Purpose

The object of this study was to determine the relative frequency of occurrence, in good English, as written and spoken today, of the various simple sounds and commoner sound combinations — syllables and words — of the English language.

Previous investigations

Previously published investigations have dealt almost wholly with relative frequency of words, and too often have been specialized, at least in their selection of material for analysis if not in their manipulation or presentation of data secured, for some particular purpose. The more important published word counts are listed below, in chronological order, with brief comment.

Knowles, Rev J, *The London point system of reading for the blind*, London, 1904.

This list is based on analysis of 100,000 words of "passages from the English Bible and from various authors"; and gives, in order of frequency, with frequency of each, the 353 commonest words (occurring 25 times or more).

Eldridge, R C, *Six thousand common English words, their comparative frequency and what can be done with them*, Niagara Falls, N Y, 1911.

This list, the only word count published complete, so far as I can find, is an analysis of 34,989 words from 4 issues of 4 different Sunday newspapers published in Buffalo in July and August, 1909; and gives in order the frequency of every word, 6002 different words, of which the most frequent 750 constitute over 75% of the whole material analyzed.

4 *Relativ Frequency of English Speech Sounds*

Ayres, Leonard P, *The spelling vocabularies of personal and business letters*, Russell Sage Foundation, New York, 1913.

This tabulates 23,629 words from 2,000 short letters written by 2,000 people; finding 2,001 different words and reporting the frequency of the more common.

Cook, W A, & O'Shea, M V, *The child and his spelling*, Bobbs-Merrill, 1914.

This list is based on 200,000 words from the family correspondence of 13 adults. Several alphabetic lists, with frequencies, are given, showing 186 words used by all 13 correspondents, 577 words used by a majority of the correspondents, etc; but no clear statement is made, or obtainable without complete retabulation, as to the most frequent words or their combined frequency. Only 5,200 different words are found in the total 200,000.

Jones, W Franklin, *Concrete investigation of the material of English spelling*, University of South Dakota, 1914.

This list tabulates 4532 different words, occurring in about 15,000,000 words of specially written grade themes, according to the grade in which each was first used by at least 2% of the students, but gives no more direct information as to relativ frequency. The investigation lists also 100 *spelling demons*, or the 100 words of English most often misspelled.

Ayres, Leonard P, *A measuring scale for ability in spelling*, Russell Sage Foundation, New York, 1915.

This list, much the most widely quoted at the present time, is based on the material of the first 4 lists above cited, properly weighted and combined and reduced to a basis of occurrences per 100,000 words. Ayres says: "The aggregate amount of written material analyzed in securing these results was approximately 368,000 words, written by some 2,500 different persons. More than $\frac{2}{3}$ of the material consisted of personal and business letters."

Ayres' list gives in order of frequency, with frequency of each per 100,000 words, the 1000 commonest words, which make up 91,899 per 100,000; the 100 commonest making up 59,591. Owing no doubt to lack of any equally accurate and comprehensive count based on more diversified material, Ayres draws altogether too sweeping conclusions as to the percentage importance in all or general matter of the commonest words which he reports.

16 spelling scales, *Teachers College Record*, v 21, nr 4, (Sept 1920).

This investigation lists in alphabetic order, with frequencies, the second and third thousand commonest words derived from the material used by Ayres, above noted. Ayres rightly points out that the 1000 commonest words represent about the farthest limit at which any statement as to the commonest words has general significance independent of the particular material investigated.

Thorndike, Edward L, *The teacher's word book*, Teachers College, Columbia University, 1921. Discusst in article *Word knowledge in*

the elementary school in Teachers College Record, vol 22, nr 4, (Sept, 1921).

"The teacher's word book is an alphabetical list of the 10,000 words which are found to occur most widely in a count of . . . (about 4,565,000 words). 41 different sources were used.

"A measure of the range and frequency of each word's occurrence is given by the credit-number following it." Elsewhere it is stated: "The reader is asked to accept arbitrarily these credits since an explanation of the method by which they were obtained is too involved to be given here."

This latest publication becomes increasingly unsatisfactory the more closely it is examined. The heterogeneous selection of material is by no means representative of anything in particular, such as the words most used by school children or by adults, in reading or in writing; and as representative of everything in general is scarcely more defensible. Furthermore, as Ayres* rightly and clearly pointed out in 1915, beyond the 500 or at most the 1000 commonest words, no statement of the inherently commonest words of English, independent of the particular material analyzed, is possible.

The complex credit-number scheme by which the quantitative data are reported is glaringly defective and misleading, with respect to the most common words at least. Compare Thorndike's rating and Ayres' per cent for the 6 commonest words of the present investigation, together making up over 20% of all words found:

Word	Dewey %	Ayres %	Thorndike rating
the	7.3	6.4	208
of	4.0	3.4	205
and	3.3	3.4	210
to	2.9	3.2	208
a	2.1	1.9	208
in	2.1	1.9	211
(For the least frequent of the 1000 commonest words)	.011	.012	49)

Space forbids further comment, but in other important particulars, including an explicit or implied confidence in the results not warranted by the basic conditions, this latest and most extended word count is open to serious criticism.

(1) There are, in addition to the above, several unpublished word counts, of which the earliest and best diversified is that made by Melvil Dewey, about 1900, as a basis for his notehand list of 100 abbreviations for the most common words. This counted 60,000 words, in twelve 5000 word selections from standard English literature, but

* A measuring scale for ability in spelling, page 9.

unfortunately did not itemize the infrequent words counted, and so could not be used as a basis for analysis of syllables and sounds.

The enormous amount of time and effort expended on such studies as Cook & O'Shea, Jones, Ayres, etc, which investigate and attempt to provide objective measurement of the difficulties of the conventional English spelling, must be included among the conspicuous wastes, in education, even more than in commerce and international relations, for which our present English spelling is responsible. In view of the consensus of all competent authority as to the anomalous and indefensible character of our present orthography, such effort is fairly comparable to the establishment at a grade crossing of a modern emergency hospital, instead of regrading the crossing to eliminate the hazard.

The conspicuous defect of most of the foregoing word counts is insufficient diversity of material to assure a representative character. It was for this reason principally that I considered it necessary to make my own word count of 100,000 words of carefully diversified material, instead of basing my sound and syllable analyses on word counts already available. The soundness of this decision is strikingly emphasized by comparing the final summary of the Cook & O'Shea count above noted, which finds only 5,200 different words in 200,000, with my own results which find 10,161 different words in 100,000.

A warning should be inserted here against attempting to compile data with respect to syllables or sounds on the basis of any list of commonest words only, however good. It is an interesting and significant fact that some of the commonest syllables of the language scarcely occur among the 500 or even 1000 commonest words, but owe their importance rather to occurrence in many different words each relatively infrequent. This is particularly true of prefixes, suffixes, and other combining forms of Latin or Greek origin, whereas in any short list of commonest words short and Anglo-Saxon words predominate. The result, as proved by analyses not here reported, is that analytic data based on commonest words *only* will give,

inevitably, a seriously distorted picture of the language as a whole.

With respect to syllables there exist no previous reliable data on even a small scale. Various fragmentary and unsupported statements occur in the literature of shorthand, but none give evidence of any adequate or dependable basis, and many betray a naive ignorance of the very nature of a syllable; as in the case of one author, not yet extinct, who gravely treats as a syllable *any* combination of 2 letters — and bases his system on the treatment!

The literature of shorthand contains similar fragmentary statements with respect to sounds, which agree chiefly in recognizing the preponderance of the 3 consonants, n t r, which Isaac Pitman called "the bones of the shorthand skeleton." The more frequent half of the consonants in these statements will be found to agree fairly well in selection, though not in arrangement, with each other and with the facts; but with respect to the vowels, which have always constituted the weak point of English shorthand, owing largely to our intricate and disorderly spelling, such statements are altogether unreliable.

There exists however one statement of the relative frequency of the simple sounds of English wholly scholarly and, with certain limitations, reliable. This was published in 1874 by William Dwight Whitney, in an essay entitled *The elements of English pronunciation*.* It is based on analysis of 10,000 sounds, 1,000 each from 10 literary classics, 5 prose and 5 poetry, in accord with his own pronunciation. Professor Whitney was certainly entitled to take his own pronunciation as a standard, but unfortunately this procedure makes impossible any clear comparison with the present investigation, for the phonetic basis adopted differs just enough to make definite correlation of his results with the present series impossible. For the consonants, which admit of much closer comparison, differences of 10 to 20% are the rule, with a few much greater or smaller discrepancies; indicating clearly that 10,000 sounds afford much too narrow a basis for definite general conclusions.

* *Oriental and linguistic studies*, p 202-276, Scribners, 1893.

In general it may be said that except for lists of the 100 or 1000 commonest words, which comparisons show to be based on too restricted selection of material, reliable data for this whole field have been conspicuously lacking.

Material and methods

Study of previous investigations indicated that 100,000 words of material would, if sufficiently diversified, furnish data adequate for the purposes desired. 10,000 words would perhaps have sufficed to furnish reliable data on the simple sounds, but for the sound combinations, particularly the syllable combinations, for which no reliable comparative data were available, 100,000 words seemed necessary, and sufficient.

The first step therefore was to select 100,000 words of connected matter adequately representative of good English as used — written, spoken, and printed — today. This definition should be kept in mind in examining the table of selections which follows; as it accounts for the omission of Shakespeare, and the literary classics of the 17th, 18th, and early 19th centuries, which however widely read do not represent the *usage* of today.

TABLE I

MATERIAL ANALYZED

100,000 words of connected matter (excluding numerals and proper names), representative of English as written and spoken today; no single source contributing more than 5,000 words.

	<i>Words</i>
15% newspaper editorial English	
New York Tribune.....	5,000
Boston Evening Transcript.....	5,000
Los Angeles Daily Times.....	5,000
15% newspaper news English	
Chicago Daily Tribune.....	5,000
Kansas City Star.....	5,000
Atlanta Constitution.....	5,000
15% modern fiction	
5% novel	
Winston Churchill (<i>The Crisis</i>).....	2,500
William Allen White (<i>A Certain Rich Man</i>).....	2,500

5%	short story	
	Rudyard Kipling (The Day's Work).....	2,500
	Mark Twain (The American Claimant, etc).....	2,500
5%	drama	
	William Dean Howells (The Mouse-trap, etc).....	2,500
	Clyde Fitch (The Stubbornness of Geraldine).....	2,500
10%	modern American speeches	
	Abraham Lincoln.....	5,000
	Theodore Roosevelt.....	2,500
	Woodrow Wilson.....	2,500
5%	personal correspondence	
	Richard Harding Davis.....	2,500
	Robert Louis Stevenson.....	2,500
5%	business correspondence	
	5 manuals of typewriting, business English, and short-hand — 1,000 words each.....	5,000
5%	modern advertizing	
	19 advertizements representing leading advertizers, mediums, and agencies.....	5,000
5%	religious English	
	Holy Bible (St Mark 1:1—).....	1,000
	Henry Ward Beecher (Sermons).....	1,000
	Phillips Brooks (Sermons).....	1,000
	Christian Herald (editorial).....	1,000
	Catholic News (editorial).....	1,000
5%	(popular) scientific English	
	Scientific American.....	3,000
	Science.....	1,000
	Popular Mechanics.....	1,000
5%	modern 'special articles'	
	Literary Digest.....	1,000
	American Magazine (2).....	2,000
	Outlook.....	1,000
	Independent.....	1,000
5%	magazine editorial English	
	Independent.....	1,000
	Atlantic Monthly.....	1,000
	New Republic.....	1,000
	Pictorial Review.....	1,000
	American Magazine.....	1,000
5%	Saturday Evening Post	
	100 words top second reading matter column, 50 consecutive pages.....	5,000
5%	Literary Digest	
	Similar mechanical sampling.....	5,000
	Total number of words analyzed.....	100,000

The stages of the investigation may be subdivided into: 1) Counting, recording, arranging, and listing the 100,000 words, 2) Transcribing the different words recorded in a fonetic notation based on the Revised Scientific Alfabet, 3) Analizing this fonetic transcription with respect to syllables, reducing the data thus secured from the medium precision (48 sound) basis of the Revised Scientific Alfabet to the minimum precision (41 sound) basis of the fonetic print alfabet adopted; arranging, charting, and summarizing the results in various ways, 4) Similar analisis, arrangement, and charting with respect to separate single sounds.

The word counting stage was expedited and checkt as far as possible by mecnical and other aids, including specially printed record cards, Veeder counters, Rand card holders, Smith steel signals, and a special card ledger desk. This stage, with the fonetic transcription on the original cards which accompanied it, required in all about 1200 hours. The methods used resulted in an error of not more than 3 words in any 5,000 word selection, and of only 3 words for the final total of 100,000.

In this basic count every variant of a single root was treated as a separate word; e g *large, larger, largest, largely* were treated as 4 separate words. This was of course essential to the analisis of syllables and sounds to follow. The 10,119 different word cards secured on this basis were arranged in order of frequency, and the 1,027 commonest which occurd more than 10 times each, listed, forming Table 3, the list of *Particular words* by frequency, which totals 78,633. These 1,027 cards were also arranged in alfabetic order and listed, forming Table 5, the index list of *Particular words*.

While this separate consideration of all variant forms was essential for the analisis to follow, the relativ frequency of the more common words grouping together all common variants of one root, is equally interesting and for some purposes more significant. The entire body of cards for particular words was therefore rearranged group-

ing † variants together : * single analitic cards substituted for all groups totaling over 10 occurrences, and all cards now over 10 arranged and listed in order of frequency and in alfabetic order, forming the *Root words* lists, Tables 4 and 6, which parallel the *Particular words* lists above noted. In the *Root words* lists number in colum at left shows combined frequency, while number following / at right shows number of different forms which make up the total; omission of this / and number indicating that the word occurd only in the form appearing in the list.

For the second stage it was necessary to hav: a) a definit authority for pronunciation; b) an explicit and unmistakable fonetic notation; and c) particularly for the third and fourth stages to follow, a definit linear order for the fonetic alfabet.

The Standard Dictionary (Funk & Wagnalls, New York) was chosen as the only possible authority for such an investigation by reason of its use of the Revised Scientific Alfabet (popularly known as the N E A key alfabet) for indicating pronunciation. The uncouth and obsolete "Webster" notation, quite similar in the other American dictionaries, misleading and objectionable for any fonetic purpose, is quite impossible as a basis for such an investigation, for on the one hand its complex and cumbersome diacritic notation represents the avowedly same sound in several different ways, while on the other it indicates certain differences of sound not merely subtle but according to the most competent authority non-existent. Murray's New Oxford Dictionary, using ‡ the International Fonetic Association alfabet, was not completed, and would in any case hav conformd les closely to American usage.

* 20 of the commonest suffix variants so groupd were

-s	-(a)tion(s)	-ive	-al
-ed	-ment(s)	(e)th	-ance
-ing(s)	-est	ful	-y
-er(s)	-(e)n	less	-ity
-ly	-ant	-ness	-able

Combinations such as *drive*, *driven*, in which a markt change in the sound of the root takes place, were *not* made.

† suffix.

‡ substantially.

The principal defect of the Revised Scientific Alphabet, for the particular purposes of this analysis, was its use of 4 complex digraf ligatures for the 4 consonant sounds of *thin then ship chap*, and its writing of the vowel diphthongs by their component elements, interfering seriously with the mechanical ease and certainty of identifying and distributing syllables by their single explicit vowel element. These difficulties are fully overcome in the fonetic alphabet adopted for this investigation, which is set forth in detail in Appendix A. This alphabet is based on careful study of all important previous attempts at a fonetic notation for English, and extended correspondence and conference with the ablest fonetists of the United States, including particularly Professor Raymond Weeks of Columbia and Professor Charles H Grandgent of Harvard, both of whom were of great assistance in determining this notation and the question of linear order following. In view of its subsequent adoption by the Simplified Spelling Board, for indicating pronunciation in its various publications, it may be designated as the S S B key alphabet.

No definite linear order for a fonetic notation has been established by competent authority. The nearest approach to an accepted order is found in the usual presentations of the alphabet of Pitmanic shorthand, which proceed in general: from consonant to vowel to diphthong; from explodant to continuant consonant groups, and from palatal to labial vowel groups; from front to back in point of articulation of consonants, from back to front in vowels; from surd to sonant in consonant pairs, from short to long (sometimes from long to short) in vowel pairs; with the 4 vowel diphthongs usually distinguished by their latter elements. These tendencies, useful for shorthand presentation, were carefully considered in establishing the definite order shown in Appendix A. This appendix will repay careful study in interpreting the results hereafter presented.

The fonetic transcription from Key 1 of the Standard Dictionary to the word cards did not make the reduction from 48 to 41 sounds referred to in Appendix A. The 7 additional sounds interpolate readily in the linear order,

as will appear in Table 15 (page 125) which gives the frequency of the 48 sounds in fonetic order.

The preferred or first of alternative pronunciations was used uniformly.

The third stage, analysis by syllables, which required, including final tabulation of results, about 1080 hours, was based on the *Particular word* cards secured by stages 1 and 2; each card now containing among other data the total frequency, conventional spelling, and fonetic transcription of one word. Specially printed analysis cards, on which entries were made with a set of 100 rubber stamps numbered from 0 to 99, were used. The analysis was arranged to determine for each syllable not only its total frequency of occurrence but also how often it occurred initially, medially, or finally, or alone in words.

Immediately on completion of the syllable analysis above described the syllable cards were combined on a 41 sound basis, eliminating the 7 finest distinctions (see Appendix A) of the 48 sound dictionary key. This step gave about 4,400 different syllable cards, showing a total of about 143,000 syllables for the 100,000 words. The 1370 most frequent of these syllables forming 133,586 syllable occurrences, or over 93% of the total, form the basis of the syllable data hereafter reported.

The procedure of the fourth stage, analysis by sounds, which required in all about 720 hours, was similar to that above described for the syllable analysis. Two complete independent analyses by sounds were made, the first distinguishing the occurrence of sounds initially, medially, or finally, or alone in *syllables*; the second distinguishing their occurrence similarly in *words*. The total results of these 2 analyses gave an important and necessary check, the only check possible, on this stage of the investigation; while the separate data of both analyses are profoundly important as a guide to shorthand construction.

The total results of the sound analysis are reported on a 48 sound, a 41 sound, and a 40 sound basis, as will be described in the section on sounds. The results of the 2 more detailed analyses, showing position of sounds in syllables or words, are reported on a 41 sound basis only.

14 *Relative Frequency of English Speech Sounds*

Incidental data on the occurrence of proper names, numerals, abbreviations, punctuation, etc., are summarized briefly in Table 2 following.

TABLE 2. INCIDENTAL DATA

(not included in count of 100,000 words analyzed)

Proper names.....	6,404
Numerals.....	2,102
Titles & salutations	
Mr.....	148
Mrs.....	44
General.....	44
Sir.....	33
Secretary.....	28
Miss.....	25
Judge.....	18
Dr.....	14
Gentlemen.....	13
Colonel.....	12
Other miscellaneous.....	<u>203</u>
	582
Abbreviations (not including titles)	
Co.....	16
No.....	13
Other miscellaneous.....	<u>81</u>
	110
Foreign words (chiefly French & Latin)	42
Punctuation	
.	5,951
'	5,275
-	2,416
" " (1,108 x 2).....	2,216
'	835
—	540
;	442
?	330
!	304
() (122 x 2).....	244
:	218
\$	76
&	23
/	16
%	13
Other miscellaneous.....	<u>13</u>
	18,912
Number of sentences.....	5,446
Average length of sentence, including proper names but excluding numerals, etc: $106,404 + 5,446 = 19.6$ words (about)	

Part 2—Words

Part 2

Words

Relative frequency of the commoner words of English

Tables 3 and 4 following show, in parallel columns, the frequency of every word occurring oftener than 10 times in 100,000 words: the left column, *Particular words*, considering each variant form as a separate word; the right column, *Root words*, grouping together all ordinary variants of one root.* The figures following the bar at the extreme right show the number of variant forms so groupd in each case.

Summarizing Table 3, *Particular words*:

9	words form	over 25%	of the whole	100,000
69	"	50%	"	"
732	"	75%	"	"

or

10	words make up	26,677	of the whole	100,000
100	"	54,303	"	"
1,000	"	78,336	"	"

and

1,027 words occur over 10 times, totaling 78,633 words.

In the *Root words* table:

1,131 words occur over 10 times, totaling 87,358 words.

For the 1,000 commonest words, the *Root words* table exceeds the *Particular words* table by less than 10%, a difference which decreases progressively for any lesser number of words.

These figures I consider amply to justify the general conclusions that, of any specimen of connected English sufficiently long to be fairly representativ:

	<i>The 10 commonest words here reported will form over</i>	<i>25%</i>
②	100	"
	1,000	"
		<i>50%</i>
		<i>75%</i>

* See page 10-11.

The first conclusion will undoubtedly hold for specimens as short as 1,000 words, the second should hold for 10,000 words or more, the third may or may not hold strictly for reasonably diversified material of 100,000 words or more. Beyond this point no *general* statement as to the most common words can be developed, even by counting 1,000,000 words or more,* for the nature of the words encountered is no longer common to all grammatical discourse but varies more and more widely according to the subject matter of the material counted.

The figures here reported clearly indicate the too sweeping nature of previous conclusions as to the frequency or importance of the 1,000 commonest words—conclusions based on counts of not sufficiently diversified material.

Tables 3 and 4 of words in order of frequency are immediately followed by Tables 5 and 6 of the same words in alphabetic order, also in parallel columns and showing frequencies.

* See statement by Ayres, referred to on page 5.

TABLE 3

7,310	the
3,998	of
3,280	and
2,924	to
2,120	a
2,116	in
1,345	that
1,216	it
1,213	is
1,155	I
1,035	for
846	be
839	was
782	as
775	you
727	with
680	he
643	on
617	have
600	by
589	not
585	at
572	this
542	are
529	we
517	his
504	but
478	they
466	all
458	or
454	which
445	will
433	from
411	had
390	has
368	one
331	our
330	an
③ 328	been
321	no
315	their
306	there
305	were
300	so
296	my
263	if
257	me
253	what
252	would
248	who

46,067 [50]

TABLE 4

7,310	the
3,998	of
3,280	and
2,924	to
2,120	a
2,116	in
1,488	it /4
1,367	that /3
1,236	I /5
1,224	is /2
1,035	for
956	be /3
850	was /2
808	you /5
782	as
727	with
687	he /3
658	have /3
643	on
600	by
589	not
585	at
572	this
549	are /2
537	we /3
517	his
504	but
495	they /4
467	all /2
464	will /6
458	or
454	which
433	from
414	had /2
390	has
389	one /3
357	our /3
330	an
329	been
329	my /2
329	there /3
321	no
319	their /2
307	were /2
300	so
285	him /2
283	your /4
277	can /4
267	would /2
263	if

46,922 /101

TABLE 3

237	when
234	him
228	them
222	her
214	war
214	your
210	any
210	more
210	now
208	its
205	time
204	up
203	do
203	out
197	can
194	than
189	only
188	she
170	made
169	other
166	into
164	men
163	must
163	people
161	said
160	may
156	man
153	about
153	over
152	some
152	these
146	two
145	very
139	before
134	great
133	could
132	such
131	first
129	upon
124	every
124	how
123	come
123	us
120	shall
118	should
115	then
113	like
113	well
111	little
111	say

54,303 [100]

TABLE 4

262	them /2
260	what /2
257	me
248	who
239	do /2
237	when
234	her /3
232	time /2
217	war /2
210	any
210	more
210	now
207	up /3
206	out /3
194	other /2
194	she /3
194	than
191	say /4
189	only
180	people /3
178	great /3
175	day /4
171	come /4
171	know /4
170	made
168	men /2
168	must /2
167	man /5
166	into
166	make /6
164	take /4
162	may /2
161	said
153	about
153	over
152	some
152	these
152	year /2
147	could /2
146	how /2
146	two
145	very
144	go /3
142	see /3
139	before
137	such
131	first
129	like /7
129	upon
127	give /4

55,899 /214

Relative Frequency of English Speech Sounds

TABLE 3	TABLE 4	TABLE 3	TABLE 4
108 because	127 work /7	69 also	81 hand /4
108 being	126 thing /2	68 public	81 high /4
108 under	125 good /3	④ 68 today	79 line /2
107 after	124 every	68 yet	79 while /2
107 here	123 did /2	67 don't	78 govern /9
106 good	123 us	67 same	76 matter /2
105 make	120 shall	67 thought	75 am
105 most	119 should /2	63 each	75 ask /4
104 many	119 way /2	63 far	75 seem /3
104 much	117 after /3	63 home	75 thought /3
104 those	117 get /3	63 put	75 three
104 way	117 world /4	62 again	73 against
103 see	115 then	62 always	72 gun /3
103 world	113 well	61 nothing	72 mean /4
102 know	112 little /2	61 present <i>a</i> & <i>n</i>	72 possible /4
101 day	111 country /5	60 between	72 real /4
101 never	110 here /2	60 going	72 show /5
100 did	110 just /4	60 money	71 came
99 new	110 long /7	60 per	71 case /2
95 down	110 right /6	59 once	71 home /3
94 even	109 under /2	59 peace	71 order /4
94 long	108 because	59 woman	71 tell /3
93 years	107 most /2	59 year	70 act /8
92 country	104 many	58 another	70 without
91 business	104 much	58 away	69 also
91 right	104 new /4	58 cannot	69 cent /2
89 get	104 those	58 fact	69 look /4
89 life	101 never	58 half	69 need /6
86 just	100 use /6	58 still	69 public /2
④ 86 take	99 think /3	57 give	68 name /5
83 where	98 down /3	57 government	68 power /3
83 work	97 part /3	57 power	68 present /3 <i>a</i> & <i>n</i>
82 things	94 even	57 too	68 yet
79 part	94 through /2	56 yours	67 don't
78 through	92 state /6	55 found	67 pay /6
78 while	91 business	54 few	67 put /3
77 last	90 life /2	54 possible	67 same
77 might	90 own /6	53 does	67 ship /7
75 am	88 today /2	53 food	66 house /3
75 back	85 call /6	53 house	64 far /2
75 old	85 fact /4	53 less	64 save /3
75 own	85 last /4	53 oh	63 does /2
75 three	85 place /4	52 best	63 each
73 against	84 large /4	52 case	63 loss /3
73 go	84 might /5	52 line	62 again
73 think	84 old /4	52 place	62 always
71 came	83 back /5	52 says	62 fight /3
71 matter	83 want /4	52 since	62 month /4
70 days	83 where	51 ever	62 peace /3
70 without	82 interest /4	51 himself	61 nothing
58,795 [150]	61,055 /367	61,717 [200]	64,538 /517

TABLE 3

51 let
 51 military
 51 tell
 51 why
 50 big
 50 got
 50 until
 50 went
 49 find
 49 five
 48 dear
 48 interest
 48 left
 48 order
 48 service
 48 set
 48 steel
 47 women
 46 among
 46 front
 46 given
 46 hand
 46 high
 46 means
 46 night
 46 small
 46 taken
 45 both
 45 morning
 45 used
 45 whole
 44 city
 44 enough
 44 gun
 44 next
 44 thing
 44 want
 43 army
 43 off
 43 pay
 43 side
 43 stand
 42 purpose
 42 soon
 42 whose
 41 during
 41 saw
 41 young
 40 believe
 40 call

64,064 [257]

TABLE 4

61 stand /3
 60 between
 60 money
 60 per
 60 true /2
 59 believe /5
 59 dear /5
 59 nation /3
 59 once
 59 report /6
 59 woman
 58 another
 58 away
 58 follow /4
 58 half
 58 live /4
 58 purpose /2
 58 still
 57 army /3
 57 cause /4
 57 find /3
 57 kind /4
 57 law /6
 57 too
 56 few /2
 56 found /2
 56 less /4
 56 letter /2
 56 train /5
 55 carry /4
 55 food /2
 55 general /4
 55 hour /4
 54 big /3
 54 eye /3
 54 form /8
 54 service /3
 54 set /3
 54 small /3
 54 turn /4
 53 number /4
 53 oh
 53 six /5
 52 beat
 52 consider /8
 52 labor /6
 52 love /7
 52 near /4
 52 since
 52 whole /2

67,342 /676

TABLE 3

40 done
 40 fighting
 40 name
 40 situation
 40 something
 40 took
 39 cent
 39 labor
 39 large
 39 mind
 39 water
 38 battle
 38 conditions
 38 it's
 38 statement
 38 though
 37 almost
 37 course
 37 general
 37 nation
 37 several
 37 six
 36 ago
 36 asked
 36 doing
 36 either
 36 gave
 36 letter
 36 seen
 36 state
 36 use v
 35 amount
 35 children
 35 four
 35 full
 35 necessary
 34 books
 34 certain
 34 early
 34 law
 34 themselves
 33 brought
 33 capital
 33 coal
 33 end
 33 eyes
 33 forty
 33 known
 33 myself
 33 really

65,817 [300]

TABLE 4

51 city /4
 51 condition /2
 51 ever
 51 feel /3
 51 let
 51 military
 51 why
 50 certain /3
 50 end /5
 50 girl /2
 50 got
 50 hope /8
 50 pass /4
 50 side /2
 50 until
 50 went
 49 continue /11
 49 five
 49 force /6
 49 front /3
 49 night /2
 49 open /6
 49 pound /3
 49 water /3
 48 care /9
 48 commit /6
 48 left
 48 permit /5
 48 person /6
 48 plan /4
 48 point /3
 48 reason /6
 48 soon /2
 48 steel
 48 women /2
 47 full /3
 46 among
 46 build /7
 46 differ /7
 46 morning /2
 46 read /5
 46 require /5
 45 book /2
 45 both
 45 fail /6
 45 free /3
 45 keep /5
 45 price /4
 45 supply /4
 44 enough

69,751 /852

Relative Frequency of English Speech Sounds

TABLE 3

33	save
33	told
33	yesterday
32	better
32	called
32	cause
32	feel
32	free
32	girl
32	hands
32	keep
32	love
32	making
32	months
32	need
32	number
32	point
32	rather
32	subject
32	wheat
32	wrong
31	afternoon
31	enemy
31	having
31	kind
31	open
31	real
31	show
31	whether
30	able
30	anything
30	ask
30	become
30	cents
30	dinner
30	face
30	feet
30	hope
30	I'm
30	knew
30	knows
30	look
30	price
30	seems
30	true
30	truly
30	turned
30	twenty
29	committee
29	common

67,368 [350] 71,794 /1,038

TABLE 4

44	meet /4
44	mind /3
44	move /6
44	next
44	question/4
44	result /4
43	battle /3
43	boy /4
43	off
43	operate /9
42	charge /4
42	direct /8
42	enemy /3
42	idea /2
42	mile /3
42	million /4
42	whose
41	begin /4
41	capital /6
41	during
41	early /3
41	face /3
41	four /3
41	saw
41	situation /2
41	soldier /5
41	young
40	done
40	ease /5
40	increase /4
40	respect /8
40	something
40	subject /4
40	thousand /2
40	took
40	week /2
40	write /5
39	become /3
39	change /4
39	child /4
39	complete /5
39	friend /4
39	hold /5
39	industry/4
39	object /10
39	wrong /2
38	announce /6
38	attack /4
38	children /2
38	clear /7

TABLE 3

29	further
29	future
29	held
29	idea
29	miles
29	past
29	view
28	action
28	along
28	boys
28	complete
28	lost
28	nor
28	result
28	send
28	sent
28	use n
28	whom
28	wish
27	already
27	beginning
27	buy
27	head
27	lines
27	moment
27	office
27	often
27	party
27	quite
27	saying
27	soldiers
27	thousand
27	times
26	hour
26	hours
26	impossible
26	itself
26	makes
26	perhaps
26	pounds
26	seemed
26	special
26	troops
26	value
25	above
25	building
25	different
25	flour
25	hear
25	help

68,721 [400] 73,600 /1,223

TABLE 4

38	course /2
38	demand /4
38	exist /6
38	head /7
38	necessary /3
38	office /2
38	politic /6
38	though
38	value /5
38	wish /4
38	word /3
37	almost
37	amount /3
37	cost /4
37	drive /4
37	forty /3
37	official /3
37	reach /4
37	remember /4
37	several
37	view /4
36	ago
36	buy /5
36	either
36	express /6
36	farm /6
36	gave
36	help /5
36	inform /4
36	land /4
36	organize /4
36	party /3
36	receive /4
36	trouble /5
36	wheat /2
35	car /2
35	enforce /4
35	perfect /4
35	regard /5
35	special /5
34	destroy /7
34	issue /4
34	late /4
34	loan /2
34	note /5
34	officer /3
34	recent /2
34	speak /5
34	success /5
33	afternoon /3

TABLE 3	TABLE 4	TABLE 3	TABLE 4
25 land	33 base /6	23 reason	30 knew
25 loan	33 brought	23 received	30 learn /3
25 others	33 coal	23 school	30 machine/3
25 sea	33 heavy /5	23 yes	30 mere /2
25 together	33 import /3	22 around	30 minute /3
25 week	33 moment /4	22 court	30 offense /3
24 administration	33 please /3	22 department	30 picture /3
24 behind	33 return /4	22 dollars	30 provide /4
24 built	33 school /4	22 family	30 understand /3
24 child	33 send /2	22 hold	29 body /4
24 drive	33 serve /6	22 however	29 cut /4
24 electric	33 simple /4	22 kept	29 deal /6
24 important	33 sure /3	22 living	29 effort /2
24 indeed	33 talk /4	22 million	29 entire /2
24 information	33 told	22 offensive	29 expect /6
24 knowledge	33 yesterday	22 official	29 figure /3
24 month	32 administer /6	22 plan	29 further
24 note	32 appear /5	22 pound	29 future
24 opinion	32 better	22 remember	29 grow /5
24 read, <i>present</i>	32 control /5	22 reports	29 happy /5
24 second	32 desire /6	22 taking	29 held
24 ten	32 fire /4	22 tea	29 horse /2
24 thirty	32 play /5	22 third	29 particular /3
24 wanted	32 propose /5	22 worth	29 past
23 air	32 rather	21 alone	29 product /4
23 began	31 bombard/5	21 can't	29 self /4
23 care	31 bring /3	21 carried	29 sit /4
23 carry	31 common/3	21 change	29 trust /5
23 charge	31 effect /5	21 cost	28 account /5
23 clear	31 ground /2	21 effort	28 along
23 comes	31 happen /5	21 evening	28 answer /4
23 coming	31 hard /7	21 fight	28 electric /2
23 company	31 hear /3	21 following	28 lead /5
23 didn't	31 road /2	21 glad	28 mother /3
23 eight	31 run /4	21 hard	28 nor
23 except	31 sea /2	21 heavy	28 opinion /2
23 force	31 secure /6	21 hundred	28 represent /7
23 ground	31 street /2	21 list	28 safe /4
23 guns	31 thank /4	21 national	28 sent
23 heard	31 twenty /2	21 needs	28 strange /5
23 looking	31 whether	21 o'clock	28 use <i>n</i>
23 mean	30 able	21 perfect	28 whom
23 modern	30 anything	21 products	27 already
23 near	30 attend /6	21 proper	27 authority /2
23 officers	30 company/3	21 road	27 bear /5
23 political	30 dinner	21 room	27 defend /7
23 poor	30 dollar /3	21 street	27 execute /8
23 position	30 employ /7	21 sure	27 final /3
23 pretty	30 feet	21 thank	27 leave /4
23 question	30 field /2	21 that's	27 often

69,901 [450]

75,182 /1,394

70,979 [500]

76,611 /1,555

TABLE 3	TABLE 4	TABLE 3	TABLE 4
21 trouble	27 patriot /6	19 report	25 system /7
21 truth	27 plain /3	19 seem	25 thirty /2
21 unless	27 pretty /4	19 sense	25 together
21 write	27 quite	19 similar	25 try /2
20 account	27 rate /3	19 stooped	25 watch /3
20 continue	27 wonder /5	19 strength	24 accord /4
20 field	27 worth /3	19 success	24 address /4
20 gone	26 chair /5	19 supply	24 age /3
20 I'll	26 command /9	19 system	24 ally /3
20 I've	26 deliver /5	19 thinking	24 awful /2
20 justice	26 department /3	19 till	24 beauty /3
20 letters	26 discover /6	19 toward	24 behind
20 live v	26 eat /5	19 train	24 built
20 loss	26 establish /5	19 understand	24 collect /10
20 meeting	26 family /3	19 word	24 contract /3
20 met	26 father /3	18 although	24 duty /2
20 method	26 flour /2	18 answer	24 fall /4
20 mother	26 heart /7	18 artillery	24 history /5
20 nature	26 human /4	18 attack	24 hundred /2
20 ourselves	26 immediate /2	18 body	24 indeed
20 pass	26 impossible	18 bonds	24 manufacture /6
20 range	26 method /2	18 cars	24 meat /3
20 regard	26 pack /7	18 cut	24 member /2
20 ships	26 perhaps	18 doubt	24 poor /2
20 sort	26 seven /5	18 duty	24 press /4
20 story	26 strike /3	18 eye	24 room /3
20 talk	26 transport /3	18 fifty	24 second
20 victory	26 troops	18 foreign	24 store /4
20 within	25 above	18 form	24 support /5
19 age	25 agree /7	18 fresh	24 ten
19 attention	25 air /3	18 girls	24 touch /5
19 beyond	25 apply /6	18 heart	24 toward /2
19 bombardment	25 arrive /4	18 history	24 wait /3
19 bring	25 bond /3	18 largest	23 add /4
19 cases	25 concern /4	18 leave	23 admit /5
19 check	25 correspond /5	18 light	23 art /5
19 easy	25 else /3	18 machine	23 bad /2
19 happy	25 evening /3	18 merely	23 began
19 human	25 experience /3	18 news	23 check /3
19 interesting	25 favor /6	18 numbers	23 claim /3
19 least	25 judge /5	18 places	23 court /2
19 material	25 knowledge /2	18 play	23 draw /5
19 meet	25 low /5	18 probably	23 eight
19 memory	25 mine /5	18 problem	23 except
19 milk	25 practical /2	18 rate	23 fear /4
19 oil	25 prepare /4	18 recent	23 heard
19 particular	25 realize /4	18 required	23 limit /4
19 permitted	25 remain /5	18 rest	23 main /2
19 plans	25 sense /5	18 run	23 marry /4
19 ready	25 sort /3	18 ship	23 modern
71,962 [550]	77,896 /1,750	72,877 [600]	79,084 /1,902

TABLE 3	TABLE 4	TABLE 3	TABLE 4
18 simple	23 motor /6	16 avenue	21 difficult /3
18 support	23 paper /2	16 awfully	21 doubt /3
18 town	23 position	16 contract	21 enter /4
18 words	23 problem/2	16 county	21 equip /3
17 according	23 produce /6	16 delay	21 gain /4
17 announced	23 profit /5	16 demand	21 glad
17 authority	23 purchase/6	16 else	21 include /4
17 car	23 shell /3	16 feeling	21 lack /4
17 character	23 suggest /6	16 generally	21 natural /4
17 cold	23 yes	16 getting	21 nature /2
17 community	22 around	16 greater	21 o'clock
17 control	22 bank /5	16 honor	21 prevent /5
17 effect	22 decide /4	16 issue	21 probable/3
17 enforced	22 equal /3	16 laws	21 progress/3
17 everything	22 fine /4	16 low	21 proper
17 experience	22 fish /7	16 main	21 railroad /3
17 father	22 hero /4	16 members	21 rule /5
17 figures	22 honor /3	16 millions	21 slave /3
17 fine	22 imagine /5	16 minutes	21 spirit /3
17 forward	22 kept	16 nations	21 task /2
17 friend	22 list /2	16 opportunity	21 unless
17 friends	22 national/2	16 ought	21 west /3
17 goods	22 possess /8	16 paid	20 accept /6
17 higher	22 reduce /3	16 picture	20 active /3
17 horses	22 responsible /3	16 plain	20 affair /2
17 instead	22 seize /5	16 pleased	20 arm /4
17 meat	22 sell /4	16 pleasure	20 arrange /5
17 none	22 start /3	16 property	20 capture /3
17 object	22 step /3	16 proposed	20 character/3
17 parts	22 story /2	16 purposes	20 construct/4
17 passed	22 straight /5	16 questions	20 county /2
17 permit	22 strong /4	16 reasons	20 determine/4
17 president	22 suppose /2	16 recently	20 faith /4
17 reach	22 tea	16 sight	20 fellow /3
17 return	22 term /2	16 social	20 fill /4
17 saved	22 third	16 south	20 gentle /5
17 self	22 ton /3	16 stood	20 gone
17 speak	22 truth /2	16 summer	20 maintain /4
17 strange	22 victor /3	16 task	20 mark /4
17 suppose	21 addition/3	16 therefore	20 memory/2
17 terms	21 advance/5	16 tons	20 met
17 thus	21 alone	16 unto	20 milk /2
④ 17 to-day	21 bill /2	16 whatever	20 oil /2
17 total	21 chief /3	16 white	20 principle/2
17 training	21 citizen /2	16 you're	20 range
17 trust	21 contain /4	15 act	20 seek /3
17 turn	21 danger /4	15 address	20 serious /3
17 win	21 declare /4	15 allies	20 stoop /2
17 won't	21 delay /3	15 announcement	20 strength/2
16 affairs	21 develop /4	15 attitude	20 suit /4
73,730 [650]	80,183 /2,070	74,525 [700]	81,205 /2,220

TABLE 3		TABLE 4		TABLE 3		TABLE 4	
15 available		20 tax /4		14 couldn't	18 fresh		
15 bad		20 throw /4		14 danger	18 instruct /5		
15 bill		20 town /2		14 date	18 light		
15 board		20 win /3		14 defender	18 news		
15 consider		20 within		14 defense	18 nine /5		
15 due		19 artillery /2		14 distance	18 offer /5		
15 efficiency		19 beyond		14 easily	18 opportunity /2		
15 entirely		19 camp /3		14 entire	18 pure /4		
15 existence		19 cheap /4		14 equipment	18 quick /5		
15 failure		19 class /3		14 established	18 remark /5		
15 fellow		19 close /3 <i>adj</i>		14 everywhere	18 rest		
15 felt		19 deep /5		14 fell	18 sacrifice /3		
15 final		19 foreign /2		14 followed	18 settle /5		
15 fire		19 fund /3		14 immediate	18 shape /4		
15 greatly		19 handle /5		14 moved	18 social /3		
15 increased		19 least		14 names	18 standard /3		
15 industrial		19 liberty /2		14 ones	18 station /3		
15 industry		19 material		14 operation	18 type /2		
15 larger		19 mill /2		14 patriotism	18 vessel /2		
15 learned		19 miss /4		14 period	18 voice /3		
15 losses		19 neighbor /4		14 person	17 attempt /4		
15 miss		19 paint /6		14 read <i>past</i>	17 avail /3		
15 nearly		19 president /2		14 region	17 avenue /2		
15 necessity		19 provision /2		14 round	17 bore /4		
15 personal		19 ready		14 sat	17 conduct /5		
15 please		19 refer /6		14 saving	17 confer /3		
15 practical		19 senate /4		14 sit	17 constitute /6		
15 progress <i>n</i>		19 short /4		14 sometimes	17 cross /4		
15 respectfully		19 sight /3		14 spirit	17 crowd /4		
15 safe		19 similar		14 standard	17 date /2		
15 shells		19 study /4		14 step	17 defense /3		
15 sold		19 teach /5		14 strike	17 detail /3		
15 transportation		19 till		14 strong	17 drink /4		
15 vessels		19 total /2		14 study	17 everything		
15 ways		19 trade /5		14 supplies	17 expense /3		
15 weeks		19 usual /2		14 throughout	17 expert /2		
15 west		18 although		14 try	17 factory /2		
15 won		18 aid /3		14 various	17 instance /2		
15 wouldn't		18 board /3		14 wait	17 instead		
14 across		18 break /2		14 wonder	17 invest /4		
14 advantage		18 cold /2		14 written	17 market /4		
14 art		18 community /2		13 aid	17 measure /4		
14 average		18 count /5		13 altogether	17 none		
14 basis		18 critic /7		13 armies	17 observe /7		
14 beautiful		18 economy /7		13 arrived	17 pleasure /2		
14 certainly		18 explain /4		13 black	17 raise /5		
14 chief		18 fair /4		13 boy	17 relate /7		
14 citizens		18 fifty		13 break	17 ring /3		
14 class		18 fly /4		13 broken	17 section /3		
14 command		18 forward /2		13 chair	17 south /2		
75,264	[750]	82,146	/2,374	75,955	[800]	83,016	/2,537

TABLE 3

13	close	<i>adj</i>
13	condition	
13	considered	
13	desire	
13	drawn	
13	facts	
13	fail	
13	farm	
13	fear	
13	foot	
13	forces	
13	gives	
13	ideas	
13	job	
13	kindly	
13	laid	
13	learn	
13	looked	
13	market	
13	minute	
13	motor	
13	neither	
13	neutral	
13	non	
13	orders	
13	paper	
13	persons	
13	press	
13	pressure	
13	provide	
13	provided	
13	reached	
13	red	
13	sacrifice	
13	satisfactory	
13	secure	
13	serious	
13	seven	
13	showing	
13	simply	
13	single	
13	size	
13	table	
13	thousands	
13	touch	
13	trains	
13	twelve	
13	village	
13	weather	
13	willing	

76,605 [850]

TABLE 4

17	table	/3
17	test	/4
17	thus	
17	vary	/3
17	weigh	/5
17	window	/2
17	won't	
17	wound	/4
16	actual	/2
16	advantage	/3
16	attitude	/2
16	beside	/2
16	clean	/5
16	cover	/4
16	custom	/5
16	depend	/6
16	distribute	/4
16	inspire	/6
16	listen	/4
16	necessity	/2
16	north	/3
16	obtain	/3
16	ought	
16	paid	
16	plant	/4
16	property	
16	refuse	/4
16	region	/2
16	round	/3
16	size	/3
16	stood	
16	suffer	/3
16	summer	
16	unto	
16	vote	/4
16	waste	/5
16	whatever	
16	white	
16	wire	/5
16	witness	/5
15	allow	/5
15	baby	/3
15	bed	/2
15	belong	/4
15	broke	/2
15	consume	/4
15	cry	/4
15	democrat	/3
15	die	/3
15	due	

83,814 /2,688

TABLE 3

13	wise	
13	working	
12	addition	
12	advance	
12	apparently	
12	attacks	
12	carbon	
12	causes	
12	changed	
12	claim	
12	confidence	
12	considerable	
12	cooperation	
12	correspondent	
12	cream	
12	declared	
12	demand	
12	difference	
12	direct	
12	driven	
12	excellent	
12	expect	
12	experts	
12	favor	
12	fish	
12	follow	
12	forget	
12	gets	
12	gold	
12	grown	
12	horse	
12	immediately	
12	largely	
12	late	
12	later	
12	liberty	
12	majority	
12	married	
12	measure	
12	mere	
12	middle	
12	mile	
12	native	
12	natural	
12	needed	
12	nobody	
12	normal	
12	officials	
12	ordinary	
12	organization	

77,207 [000]

TABLE 4

15	efficiency	
15	felt	
15	firm	
15	gather	/5
15	gold	/2
15	hill	/4
15	individual	/3
15	influence	/4
15	inquire	/4
15	insist	/5
15	involve	/3
15	job	/2
15	kill	/4
15	lay	/4
15	native	/2
15	neutral	/2
15	practise	/3
15	proceed	/6
15	promise	/4
15	rapid	/4
15	resource	/2
15	sign	/3
15	sold	
15	stay	/3
15	stone	/2
15	stop	/3
15	sweet	/3
15	treat	/6
15	wife	/2
15	won	
15	worse	/2
14	accomplish	/5
14	across	
14	airplane	/2
14	average	
14	black	/2
14	burn	/3
14	comfort	/3
14	conclude	/6
14	contribute	/5
14	defeat	/2
14	distance	
14	division	/3
14	door	/2
14	dream	/4
14	enclose	/3
14	engine	/2
14	everywhere	
14	examine	/4
14	excel	/3

84,545 /2,833

TABLE 3		TABLE 4		TABLE 3		TABLE 4	
12 peoples		14 extreme /2		11 deep		13 flag /4	
12 placed		14 fast /3		11 delivered		13 foot	
12 possibility		14 feature /3		11 developed		13 guest /2	
12 prevent		14 fell		11 earth		13 income /3	
12 principle		14 fit /4		11 election		13 indicate /7	
12 quickly		14 forget /3		11 enclosed		13 king /2	
12 reported		14 improve /5		11 engaged		13 laid	
12 ring		14 introduce /3		11 engine		13 loyal /3	
12 section		14 mistake /2		11 executive		13 majority /2	
12 shipment		14 moral /5		11 existing		13 mass /3	
12 shown		14 mystery /4		11 expected		13 master /2	
12 sitting		14 period		11 express		13 mental /2	
12 speaking		14 quarter /2		11 expressed		13 mention /2	
12 spent		14 read <i>past</i>		11 fair		13 neither	
12 stage		14 ride /4		11 fall		13 non	
12 station		14 rush /3		11 fast		13 occasion /4	
12 stop		14 sat		11 filled		13 occur /5	
12 suit		14 satisfactory /2		11 finally		13 ordinary /2	
12 taught		14 single /2		11 follows		13 page /2	
12 telling		14 sometimes		11 forth		13 present /3 v	
12 tonight		14 substitute /3		11 freedom		13 pressure	
12 type		14 tomorrow /2		11 fund		13 previous /2	
12 unknown		14 travel /6		11 gained		13 prison /3	
12 using		14 weather /2		11 giving		13 pull /5	
12 usual		14 winter /3		11 goes		13 quantity /2	
12 voice		14 written		11 greatest		13 railway /2	
12 wants		14 yard /2		11 happen		13 recognize /3	
12 works		13 achieve /4		11 herself		13 red	
12 yourself		13 admire /6		11 holding		13 share /3	
11 abroad		13 agent /2		11 I'd		13 sound /5	
11 acts		13 aim /3		11 immense		13 speech /2	
11 afraid		13 altogether		11 influence		13 terrible /2	
11 agents		13 apparent /2		11 instance		13 twelve	
11 appeared		13 approximate /3		11 involved		13 universe /5	
11 approximately		13 article /2		11 isn't		13 utter /4	
11 bear		13 assure /5		11 judgment		13 vast /3	
11 became		13 brother /3		11 lack		13 village	
11 blue		13 campaign /2		11 latter		13 wide /2	
11 book		13 complain /5		11 longer		13 wise	
11 bore		13 convince /3		11 mental		12 absolute /3	
11 bought		13 copy /3		11 mill		12 amend /6	
11 bread		13 corporation /2		11 move		12 billion /2	
11 busy		13 degree /2		11 north		12 blue /2	
11 campaign		13 dwell /8		11 offices		12 bread /2	
11 caught		13 earth /2		11 pictures		12 busy /2	
11 construction		13 engineer /3		11 police		12 carbon	
11 corn		13 estimate /3		11 prices		12 close /4 v	
11 costs		13 event /3		11 private		12 confidence	
11 credit		13 exceed /4		11 pure		12 cooperation	
11 daily		13 finish /3		11 quality		12 corn /2	
77,786	[950]	85,222	/2,978	78,336	[1,000]	85,861	/3,104

TABLE 3

II railroads
II responsible
II running
II seeing
II serve
II shape
II shipping
II spring
II staff
II started
II stay
II stone
II straight
II striking
II successful
II sum
II surely
II sweet
II tomorrow
II trade
II trying
II wasn't
II wide
II wife
II wild
II winter
II worse

78,633 [1,027]

TABLE 4

12 cream
12 daily /2
12 devote /3
12 disloyal
12 distinct /4
12 district /2
12 driven
12 east /3
12 exercise /3
12 floor /3
12 fright /5
12 furnish /3
12 hate /3
12 heaven /2
12 hence /2
12 highway /3
12 honest /3
12 ill /3
12 incident /3
12 insure /4
12 manner /2
12 march /3
12 middle
12 nobody
12 normal
12 physical /2
12 program /2
12 protect /3
12 record /5
12 river /2
12 roll /5
12 rub /3
12 seat /3
12 sentiment /3
12 shoulder /2
12 smile /4
12 speed /5
12 spent
12 spoke /2
12 square /3
12 stage
12 submarine /2
12 taught
12 tend /8
12 tire /3
12 tonight
12 tree /2
12 trench /2
12 union /2
12 unknown

[1,050] 86,461 /3,234

TABLE 4

12 visit
12 wage /4
12 walk /4
12 warm /5
12 weak /6
12 wood /4
II abroad
II accompany /4
II affect /5
II afford /3
II afraid
II became
II bought
II caught
II cease /3
II chapter /2
II choice /2
II color /4
II consist /5
II contrast /2
II council /2
II credit
II death /2
II definite /2
⑥ II dispatch /3
II drop /4
II educate /4
II election
II engaged
II especial /2
II evidence /2
II evident /2
II exact /3
II extend /2
II fix /4
II forth
II garden /3
II generate /4
II glory /4
II hat /2
II health /3
II hurry /3
II ideal /3
II immense
II incline /3
II institute /4
II instrument /3
II latter
II launch /3
II lesson /2

[1,100] 87,017 /3,368

TABLE 4

II manage /5
II minor /3
II mount /4
II nice /3
II notice /4
II oblige /2
II police
II potato /2
II private
II pursue /5
II quality
II race /3
II raid /4
II rank /2
II remove /3
II reserve /5
II retailer /2
II sail /5
II skill /2
II spring
II staff
II stock /2
II struggle /3
II succeed /4
II sum
II summon /4
II surprise /3
II territory /3
II wagon /2
II wild
II worry /3

[1,131] 87,358 /3,453

occur in any case, or abnormally enhance in importance by the same conditions. The effect on the syllable or sound data is insignificant.

Note From a dozen to 20 "war words," such as *troops guns offensive bombardment artillery allies shells vessels patriotism neutral attacks submarine trench*, owe their presence in these tables to the fact that the material for analysis (Table 1, page 8) was selected during the spring of 1918, and that about half of that material was of an immediately current nature inevitably influenced by war conditions. Analysis of the original detailed data readily identifies and measures the extent of this influence. A somewhat lesser number of words such as *war peace military gun soldiers fight*, which would hav

TABLE 5		TABLE 6		TABLE 5		TABLE 6	
2,120 a		2,120 a		11 approximately	62 always		
30 able		30 able		542 are	75 am		
153 about		153 about		13 armies	12 amend /6		
25 above		15 above		43 army	46 among		
11 abroad		11 abroad		22 around	37 amount /3		
17 according		12 absolute /3		13 arrived	330 an		
20 account		20 accept /6		14 art	3,280 and		
14 across		11 accompany /4		18 artillery	38 announce /6		
15 act		14 accomplish /5		782 as	58 another		
28 action		24 accord /4		30 ask	28 answer /4		
11 acts		28 account /5		36 asked	210 any		
12 addition		13 achieve /4		585 at	30 anything		
15 address		14 across		18 attack	13 apparent /2		
24 administration		70 act /8		12 attacks	32 appear /5		
12 advance		20 active /3		19 attention	25 apply /6		
14 advantage		16 actual /2		15 attitude	13 approximate /3		
16 affairs		23 add /4		17 authority	549 are /2		
11 afraid		21 addition /3		15 available	20 arm /4		
107 after		24 address /4		16 avenue	57 army /3		
31 afternoon		32 administer /6		14 average	22 around		
62 again		13 admire /6		58 away	20 arrange /5		
73 against		23 admit /5		16 awfully	25 arrive /4		
19 age		21 advance /5		75 back	23 art /5		
11 agents		16 advantage /3		15 bad	13 article /2		
36 ago		20 affair /2		14 basis	19 artillery		
13 aid		11 affect /5		38 battle	782 as		
23 air		11 afford /3		846 be	75 ask /4		
466 all		11 afraid		11 bear	13 assure /5		
15 allies		117 after /3		14 beautiful	585 at		
37 almost		33 afternoon /3		11 became	38 attack /4		
21 alone		62 again		108 because	17 attempt /4		
28 along		73 against		30 become	30 attend /6		
27 already		24 age /3		328 been	16 attitude /2		
69 also		13 agent /2		139 before	27 authority /2		
18 although		36 ago		23 began	17 avail /3		
13 altogether		25 agree /7		27 beginning	17 avenue /2		
62 always		18 aid /3		24 behind	14 average		
75 am		13 aim /3		108 being	58 away		
46 among		25 air /3		40 believe	24 awful /2		
35 amount		14 airplane /2		52 best	15 baby /3		
330 an		467 all /2		32 better	83 back /5		
3,280 and		24 ally /3		60 between	23 bad /2		
17 announced		15 allow /5		19 beyond	22 bank /5		
15 announcement		37 almost		50 big	33 base /6		
58 another		21 alone		15 bill	43 battle /3		
18 answer		28 along		13 black	956 be /3		
210 any		27 already		11 blue	27 bear /5		
30 anything		69 also		15 board	24 beauty /3		
12 apparently		18 although		18 body	11 became		
11 appeared		13 altogether		19 bombardment	108 because		

TABLE 5	TABLE 6	TABLE 5	TABLE 6
18 bonds	39 become /3	24 child	12 carbon
11 book	15 bed /2	35 children	48 care /9
34 books	329 been	14 citizens	55 carry /4
11 bore	139 before	44 city	71 case /2
45 both	23 began	12 claim	11 caught
11 bought	41 begin /4	14 class	57 cause /4
13 boy	24 behind	23 clear	11 cease /3
28 boys	59 believe /5	13 close <i>adj</i>	69 cent /2
11 bread	15 belong /4	33 coal	50 certain /3
13 break	16 beside /2	17 cold	26 chair /5
19 bring	52 best	123 come	39 change /4
13 broken	32 better	23 comes	11 chapter /2
33 brought	60 between	23 coming	20 character /3
25 building	19 beyond	14 command	42 charge /4
24 built	54 big /3	29 committee	19 cheap /4
91 business	21 bill /2	29 common	23 check /3
11 busy	12 billion /2	17 community	21 chief /3
504 but	14 black /2	23 company	39 child /4
27 buy	12 blue /2	28 complete	38 children /2
600 by	18 board /3	13 condition	11 choice /2
40 call	29 body /4	38 conditions	21 citizen /2
32 called	31 bombard /5	12 confidence	51 city /4
71 came	25 bond /3	15 consider	23 claim /3
11 campaign	45 book /2	12 considerable	19 class /3
197 can	17 bore /4	13 considered	16 clean /5
58 cannot	45 both	11 construction	38 clear /7
21 can't	11 bought	20 continue	12 close /4 <i>v</i>
33 capital	43 boy /4	16 contract	19 close /3 <i>a</i>
17 car	12 bread /2	17 control	33 coal
12 carbon	18 break /2	12 cooperation	18 cold /2
23 care	31 bring /3	11 corn	24 collect /10
21 carried	15 broke /2	12 correspondent	11 color /4
23 carry	13 brother /3	21 cost	171 come /4
18 cars	33 brought	11 costs	14 comfort /3
52 case	46 build /7	133 could	26 command /9
19 cases	24 built	14 couldn't	48 commit /6
11 caught	14 burn /3	92 country	31 common /3
32 cause	91 business	16 county	18 community /2
12 causes	12 busy /2	37 course	30 company /3
39 cent	504 but	22 court	13 complain /5
30 cents	36 buy /5	12 cream	39 complete /5
34 certain	600 by	11 credit	25 concern /4
14 certainly	85 call /6	18 cut	14 conclude /6
13 chair	71 came	11 daily	51 condition /2
21 change	19 camp /3	14 danger	17 conduct /5
12 changed	13 campaign /2	14 date	17 confer /3
17 character	277 can /4	101 day	12 confidence
23 charge	41 capital /6	70 days	52 consider /8
19 check	20 capture /3	48 dear	11 consist /5
14 chief	35 car /2	12 declared	17 constitute /6

TABLE 5		TABLE 6		TABLE 5		TABLE 6	
11 deep	20 construct /4	44 enough	26 department/3	14 entire	16 depend /6	32 desire /6	34 destroy /7
14 defender	15 consume /4	15 entirely	14 equipment	14 established	17 detail /3	20 determine/4	21 develop /4
14 defense	21 contain /4	14 evening	94 even	51 ever	12 devote /3	123 did /2	15 die /3
16 delay	49 continue/11	124 every	21 executed	17 everything	46 differ /7	21 difficult/3	30 dinner
11 delivered	24 contract /3	17 everywhere	11 executive	14 everywhere	21 dinner	42 direct /8	26 discover /6
16 demand	11 contrast /2	12 excellent	15 existence	12 expert	12 disloyal /3	71 dispatch /3	14 distance
12 demanded	14 contribute/5	23 except	11 existing	11 expected	12 distinct /4	16 distribute/4	12 district /2
22 department	32 control /5	11 exceptive	12 expert	17 experience	14 division /3	239 do /2	63 does /2
13 desire	13 convince/3	15 existence	11 eye	12 experts	30 dollar /3	40 done	67 don't
11 developed	12 cooperation	11 existing	33 eyes	11 express	40 done	14 door /2	21 doubt /3
100 did	13 copy /3	12 expert	18 eye	11 expressed	98 down /3	23 draw /5	14 dream /4
23 didn't	12 corn /2	11 expected	30 face	18 eye	23 draw /5	17 drink /4	37 drive /4
12 difference	13 corporation /2	17 experience	58 fact	30 face	11 drop /4	12 driven	15 due
25 different	25 correspond /5	12 experts	13 facts	11 fair	15 due	41 during	18 duty
30 dinner	37 cost /4	11 express	13 fail	11 fall	41 during	24 duty /2	63 each
12 direct	147 could /2	11 expressed	15 failure	22 family	24 duty /2	13 dwell /8	34 early
14 distance	11 council /2	18 eye	11 fair	63 far	63 each	41 early /3	11 earth
203 do	18 count /5	33 eyes	11 fall	13 farm	41 early /3	13 earth /2	14 easily
53 does	111 country /5	30 face	22 family	11 fast	13 earth /2	40 ease /5	19 easy
36 doing	20 county /2	58 fact	63 far	17 father	40 ease /5	26 east /3	17 effect
22 dollars	38 course /2	13 facts	13 farm	12 favor	26 eat /5	18 economy /7	15 efficiency
40 done	23 court /2	13 fail	11 fast	13 fear	18 economy /7	11 educate /4	
67 don't	16 cover /4	15 failure	17 father	32 feel	11 educate /4	31 effect /5	
18 doubt	12 cream	11 fair	12 favor	16 feeling	31 effect /5	15 efficiency	
95 down	11 credit	11 fall	13 fear	30 feet			
13 drawn	18 critic /7	22 family	12 favor	14 fell			
24 drive	17 cross /4	63 far	13 fear	15 fellow			
12 driven	17 crowd /4	13 farm	32 feel	15 felt			
15 due	15 cry /4	11 fast	16 feeling	54 few			
41 during	16 custom /5	17 father	30 feet	20 field			
18 duty	29 cut /4	12 favor	14 fell	18 fifty			
63 each	12 daily /2	13 fear	15 fellow	21 fight			
34 early	21 danger /4	32 feel	15 felt	40 fighting			
11 earth	17 date /2	16 feeling	54 few	17 figures			
14 easily	175 day /4	30 feet	20 field				
19 easy	29 deal /6	14 fell	18 fifty				
17 effect	59 dear /5	15 fellow	21 fight				
15 efficiency	11 death /2	15 felt	40 fighting				
21 effort	22 decide /4	54 few	17 figures				
23 eight	21 declare /4	20 field					
36 either	19 deep /5	18 fifty					
11 election	14 defeat /2	21 fight					
24 electric	27 defend /7	40 fighting					
16 else	17 defense /3	17 figures					
11 enclosed	11 definite /2						
33 end	13 degree /2						
31 enemy	21 delay /3						
17 enforced	26 deliver /5						
11 engaged	38 demand /4						
11 engine	15 democrat/3						

TABLE 5	TABLE 6	TABLE 5	TABLE 6
11 filled	29 effort /2	11 giving	17 factory /2
15 final	23 eight	21 glad	45 fall /6
11 finally	36 either	73 go	18 fair /4
49 find	11 election	11 goes	20 faith /4
17 fine	28 electric /2	60 going	24 fall /4
15 fire	25 else /3	12 gold	26 family /3
131 first	30 employ /7	20 gone	64 far /2
12 fish	14 enclose /3	106 good	36 farm /6
49 five	50 end /5	17 goods	14 fast /3
25 flour	42 enemy /3	50 got	26 father /3
12 follow	35 enforce /4	57 government	25 favor /6
14 followed	11 engaged	134 great	23 fear /4
21 following	14 engine /2	16 greater	14 feature /3
11 follows	13 engineer /3	11 greatest	51 feel /3
53 food	44 enough	15 greatly	30 feet
13 foot	21 enter /4	23 ground	14 fell
1,035 for	29 entire /2	12 grown	20 fellow /3
23 force	22 equal /3	44 gun	15 felt
13 forces	21 equip /3	23 guns	56 few /2
18 foreign	11 especial /2	411 had	30 field /2
12 forget	26 establish /5	58 half	18 fifty
18 form	13 estimate /3	46 hand	62 fight /3
11 forth	94 even	32 hands	29 figure /3
33 forty	25 evening /3	11 happen	20 fill /4
17 forward	13 event /3	19 happy	27 final /3
55 found	51 ever	21 hard	57 find /3
35 four	124 every	390 has	22 fine /4
32 free	17 everything	617 have	13 finish /3
11 freedom	14 everywhere	31 having	32 fire /4
18 fresh	11 evidence /2	680 he	15 firm /5
17 friend	11 evident /2	27 head	131 first
17 friends	11 exact /3	25 hear	22 fish /7
433 from	14 examine /4	23 heard	14 fit /4
46 front	13 exceed /4	18 heart	49 five
35 full	14 excel /3	21 heavy	11 fix /4
11 fund	23 except	29 held	13 flag /4
29 further	27 execute /8	25 help	12 floor /3
29 future	12 exercise /3	222 her	26 flour /2
11 gained	38 exist /6	107 here	18 fly /4
36 gave	29 expect /6	11 herself	58 follow /4
37 general	17 expense /3	46 high	55 food /2
16 generally	25 experience /3	17 higher	13 foot
89 get	17 expert /2	234 him	1,035 for
12 gets	18 explain /4	51 himself	49 force /6
16 getting	36 express /6	517 his	19 foreign /2
32 girl	11 extend /2	18 history	14 forget /3
18 girls	14 extreme /2	22 hold	54 form /8
57 give	54 eye /3	11 holding	11 forth
46 given	41 face /3	63 home	37 forty /3
13 gives	85 fact /4	16 honor	18 forward /2

Words

TABLE 5	TABLE 6	TABLE 5	TABLE 6
30 hope	56 found /2	13 kindly	31 hear /3
12 horse	41 four /3	30 knew	23 heard
17 horses	45 free /3	102 know	26 heart /7
26 hour	18 fresh	24 knowledge	12 heaven /2
26 hours	39 friend /4	33 known	33 heavy /5
53 house	12 fright /5	30 knows	29 held
124 how	433 from	39 labor	36 help /5
22 however	49 front /3	11 lack	12 hence /2
19 human	47 full /3	13 laid	234 her /3
21 hundred	19 fund /3	25 land	110 here /2
1,155 I	12 furnish /3	39 large	22 hero /4
11 I'd	29 further	12 largely	81 high /4
29 idea	29 future	15 larger	12 highway /3
13 ideas	21 gain /4	18 largest	15 hill /4
263 if	11 garden /3	77 last	285 him /2
20 I'll	15 gather /5	12 late	517 his
30 I'm	36 gave	12 later	24 history /5
14 immediate	55 general /4	11 latter	39 hold /5
12 immediately	11 generate /4	34 law	71 home /3
11 immense	20 gentle /5	16 laws	12 honest /3
24 important	117 get /3	13 learn	22 honor /3
26 impossible	50 girl /2	15 learned	50 hope /8
2,116 in	127 give /4	19 least	29 horse /2
15 increased	21 glad	18 leave	55 hour /4
24 indeed	11 glory /4	48 left	66 house /3
15 industrial	144 go /3	53 less	146 how /2
15 industry	15 gold /2	51 let	26 human /4
11 influence	20 gone	36 letter	24 hundred /2
24 information	125 good /3	20 letters	11 hurry /3
11 instance	50 got	12 liberty	1,236 I /5
17 instead	78 govern /9	89 life	42 idea /2
48 interest	178 great /5	18 light	11 ideal /3
19 interesting	31 ground /2	113 like	263 if
166 into	29 grow /5	52 line	12 ill /3
11 involved	13 guest /2	27 lines	22 imagine /5
1,213 is	72 gun /3	21 list	26 immediate /2
11 isn't	414 had /2	111 little	11 immense
16 issue	58 half	20 live v	33 import /3
1,216 it	81 hand /4	22 living	26 impossible
208 its	19 handle /5	25 loan	14 improve /5
38 it's	31 happen /5	94 long	2,116 in
26 itself	29 happy /5	11 longer	12 incident /3
20 I've	31 hard /7	30 look	11 incline /3
13 job	390 has	13 looked	21 include /4
11 judgment	11 hat /2	23 looking	13 income /3
86 just	12 hate /3	20 loss	40 increase /4
20 justice	658 have /3	15 losses	24 indeed
32 keep	687 he /3	28 lost	13 indicate /7
22 kept	38 head /7	32 love	15 individual /3
31 kind	11 health /3	16 low	39 industry /4

TABLE 5	TABLE 6
18 machine	15 influence /4
170 made	36 inform /4
16 main	15 inquire /4
12 majority	15 insist /5
105 make	16 inspire /6
26 makes	17 instance /2
32 making	17 instead
156 man	11 institute /4
104 many	18 instruct /5
13 market	11 instrument /3
12 married	12 insure /4
19 material	82 interest /4
71 matter	166 into
160 may	14 introduce /3
257 me	17 invest /4
23 mean	15 involve /3
46 means	1,224 is /2
12 measure	34 issue /4
17 meat	1,488 it /4
19 meet	15 job /2
20 meeting	25 judge /5
16 members	110 just /4
19 memory	45 keep /5
164 men	22 kept
11 mental	15 kill /4
12 mere	57 kind /4
18 merely	13 king /2
20 met	30 knew
20 method	171 know /4
12 middle	25 knowledge /2
77 might	52 labor /6
12 mile	21 lack /4
29 miles	12 laid
51 military	36 land /4
19 milk	84 large /4
11 mill	85 last /4
22 million	34 late /4
16 millions	11 latter
39 mind	11 launch /3
13 minute	57 law /6
16 minutes	15 lay /4
15 miss	28 lead /5
23 modern	30 learn /3
27 moment	19 least
60 money	27 leave /4
24 month	48 left
32 months	56 less /4
210 more	11 lesson /2
45 morning	51 let
105 most	56 letter /2

TABLE 5	TABLE 6
20 mother	19 liberty /2
13 motor	90 life /2
11 move	18 light
14 moved	129 like /7
104 much	23 limit /4
163 must	79 line /2
296 my	22 list /2
33 myself	16 listen /4
40 name	112 little /2
14 names	58 live /4
37 nation	34 loan /2
21 national	110 long /7
16 nations	69 look /4
12 native	63 loss /3
12 natural	52 love /7
20 nature	25 low /5
23 near	13 loyal /3
15 nearly	30 machine /3
35 necessary	170 made
15 necessity	23 main /2
32 need	20 maintain /4
12 needed	13 majority /2
21 needs	165 make /6
13 neither	167 man /5
13 neutral	11 manage /5
101 never	12 manner /2
99 new	24 manufacture /6
18 news	104 many
44 next	12 march /3
46 night	20 mark /4
321 no	17 market /4
12 nobody	23 marry /4
13 non	13 mass /3
17 none	13 master /2
28 nor	19 material
12 normal	76 matter /2
11 north	162 may
589 not	257 me
24 note	72 mean /4
61 nothing	17 measure /4
210 now	24 meat /3
32 number	44 meet /4
18 numbers	24 member /2
17 object	20 memory /2
21 o'clock	168 men /2
3,998 of	13 mental /2
43 off	13 mention /2
22 offensive	30 mere /2
27 office	20 met
23 officers	26 method /2

TABLE 5	TABLE 6	TABLE 5	TABLE 6
11 offices	12 middle	15 personal	12 nobody
22 official	84 might /5	13 persons	13 non
12 officials	42 mile /3	16 picture	17 none
27 often	51 military	11 pictures	28 nor
53 oh	20 milk /2	52 place	12 normal
19 oil	19 mill /2	12 placed	16 north /3
75 old	42 million /4	18 places	589 not
643 on	44 mind /3	16 plain	34 note /5
59 once	25 mine /5	22 plan	61 nothing
368 one	11 minor /3	19 plans	11 notice /4
14 ones	39 minute /3	18 play	210 now
189 only	19 miss /4	15 please	53 number /4
31 open	14 mistake /2	16 pleased	39 object /10
14 operation	23 modern	16 pleasure	11 oblige /2
24 opinion	33 moment /4	32 point	17 observe /7
16 opportunity	60 money	11 police	16 obtain /3
458 or	62 month /4	23 political	13 occasion /4
48 order	14 moral /5	23 poor	13 occur /5
13 orders	210 more	23 position	21 o'clock
12 ordinary	46 morning /2	12 possibility	3,998 of
12 organization	107 most /2	54 possible	43 off
169 other	28 mother /3	22. pound	30 offense /3
25 others	23 motor /6	26 pounds	18 offer /5
16 ought	11 mount /4	57 power	38 office /2
331 our	44 move /6	15 practical	34 officer /3
20 ourselves	104 much	61 present <i>a & n</i>	37 official /3
203 out	168 must /2	17 president	27 often
153 over	329 my /2	13 press	53 oh
75 own	14 mystery /4	13 pressure	20 oil /2
16 paid	68 name /5	23 pretty	84 old /4
13 paper	59 nation /3	12 prevent	643 on
79 part	22 national /2	30 price	59 once
19 particular	15 native /2	11 prices	389 one /3
17 parts	21 natural /4	12 principle	189 only
27 party	21 nature /2	11 private	49 open /6
20 pass	52 near /4	18 probably	43 operate /9
17 passed	38 necessary /3	18 problem	28 opinion /2
29 past	16 necessity /2	21 products	18 opportunity /2
14 patriotism	69 need /6	15 progress	458 or
43 pay	19 neighbor /4	21 proper	71 order /4
59 peace	13 neither	16 property	13 ordinary /2
163 people	15 neutral /2	16 proposed	36 organize /4
12 peoples	101 never	13 provide	194 other /2
60 per	104 new /4	13 provided	16 ought
21 perfect	18 news	68 public	357 our /3
26 perhaps	44 next	11 pure	206 out /3
14 period	11 nice /3	42 purpose	153 over
17 permit	49 night /2	16 purposes	90 own /6
19 permitted	18 nine /5	63 put	26 pack /7
14 person	321 no	11 quality	13 page /2

TABLE 5		TABLE 6		TABLE 5		TABLE 6	
23 question	16 paid	111 say	13 prison /3	27 saying	11 private	21 probable /3	23 problem /2
16 questions	19 paint /6	52 says	23 proceed /6	23 school	23 produce /6	29 product /4	23 profit /5
12 quickly	23 paper /2	25 sea	12 program /2	24 second	21 progress /3	15 promise /4	21 proper
27 quite	97 part /3	12 section	13 property	13 secure	32 propose /5	12 protect /3	30 provide /4
11 railroads	29 particular /3	103 see	19 provision /2	17 self	69 public /2	13 pull /5	23 purchase /6
20 range	36 party /3	11 seeing	18 pure /4	28 send	58 purpose /2	11 pursue /5	67 put /3
18 rate	50 pass /4	19 seem	11 quality	19 sense	13 quantity /2	14 quarter /2	44 question /4
32 rather	29 past	26 seemed	18 quick /5	28 sent	27 quite	11 race /3	11 raid /4
17 reach	27 patriot /6	30 seems	11 race /3	36 seen	11 shipping	11 raid /4	21 railroad /3
13 reached	67 pay /6	36 seen	11 railway /2	17 self	20 ships	11 raise /5	17 rank /2
24 read <i>present</i>	62 peace /3	17 send	15 rapid /4	28 send	118 should	20 range	27 rate /3
14 read <i>past</i>	180 people /3	19 sense	20 range	28 sent	31 show	32 rather	37 reach /4
19 ready	60 per	26 seemed	27 read /5 v	30 seems	13 showing	46 read /5 v	14 read <i>past</i>
31 real	35 perfect /4	36 seen	19 ready	36 seen	12 sitting	19 ready	72 real /4
33 really	26 perhaps	17 self	14 read <i>past</i>	17 self	40 situation	25 realize /4	48 reason /6
23 reason	14 period	28 send	67 receive /4	28 send	37 six	36 receive /4	34 recent /2
16 reasons	48 permit /5	19 sense	13 recognize /3	19 sense	13 size		
23 received	48 person /6	28 sent		28 sent	46 small		
18 recent	12 physical /2	13 serious		13 serious	300 so		
16 recently	30 picture /3	11 serve		11 serve			
13 red	85 place /4	48 service		48 service			
20 regard	27 plain /3	48 set		48 set			
14 region	48 plan /4	13 seven		13 seven			
22 remember	16 plant /4	37 several		37 several			
19 report	32 play /5	120 shall		120 shall			
12 reported	33 please /3	11 shape		11 shape			
22 reports	17 pleasure /2	188 she		188 she			
18 required	48 point /3	15 shells		15 shells			
15 respectfully	11 police	18 ship		18 ship			
11 responsible	38 politic /6	12 shipment		12 shipment			
18 rest	24 poor /2	11 shipping		11 shipping			
28 result	23 position	20 ships		20 ships			
17 return	22 possess /8	118 should		118 should			
91 right	72 possible /4	31 show		31 show			
12 ring	11 potato /2	13 showing		13 showing			
21 road	49 pound /3	12 shown		12 shown			
21 room	68 power /3	43 side		43 side			
14 round	25 practical /2	16 sight		16 sight			
18 run	15 practice /3	19 similar		19 similar			
11 running	25 prepare /4	18 simple		18 simple			
13 sacrifice	68 present /3a & n	13 simply		13 simply			
15 safe	13 present /3 v	52 since		52 since			
161 said	19 president /2	13 single		13 single			
67 same	24 press /4	14 sit		14 sit			
14 sat	13 pressure	12 sitting		12 sitting			
13 satisfactory	27 pretty /4	40 situation		40 situation			
33 save	21 prevent /5	37 six		37 six			
17 saved	13 previous /2	13 size		13 size			
14 saving	45 price /4	46 small		46 small			
41 saw	20 principle /2	300 so		300 so			

TABLE 5	TABLE 6	TABLE 5	TABLE 6
16 social	12 record /5	17 suppose	31 secure /6
15 sold	13 red	21 sure	153 see /4
27 soldiers	22 reduce /3	11 surely	20 seek /3
152 some	19 refer /6	11 sweet	75 seem /3
40 something	16 refuse /4	19 system	22 seize /5
14 sometimes	35 regard /5	13 table	29 self /4
42 soon	16 region /2	86 take	22 sell /4
20 sort	17 relate /7	46 taken	19 senate /4
16 south	25 remain /5	22 taking	33 send /2
17 speak	18 remark /5	20 talk	25 sense /5
12 speaking	37 remember /4	16 task	28 sent
26 special	11 remove /3	12 taught	12 sentiment /3
12 spent	59 report /6	22 tea	20 serious /3
14 spirit	28 represent /7	51 tell	33 serve /6
11 spring	46 require /5	12 telling	54 service /3
11 staff	11 reserve /5	24 ten	54 set /3
12 stage	15 resource /2	17 terms	18 settle /5
43 stand	40 respect /8	194 than	26 seven /5
14 standard	22 responsible /3	21 thank	37 several
11 started	18 rest	1,345 that	120 shall
36 state	44 result /4	21 that's	18 shape /4
38 statement	11 retailer /2	7,310 the	13 share /3
12 station	33 return /4	315 their	194 she /3
11 stay	14 ride /4	228 them	23 shell /3
48 steel	110 right /6	34 themselves	67 ship /7
14 step	17 ring /3	115 then	19 short /4
58 still	12 river /2	306 there	119 should /2
11 stone	31 road /2	16 therefore	12 shoulder /2
16 stood	12 roll /5	152 these	72 show /5
19 stooped	24 room /3	478 they	50 side /2
12 stop	16 round /3	44 thing	19 sight /3
20 story	12 rub /3	82 things	15 sign /3
11 straight	21 rule /5	73 think	19 similar
17 strange	31 run /4	19 thinking	33 simple /4
21 street	14 rush /3	22 third	52 since
19 strength	18 sacrifice /3	24 thirty	14 single /2
14 strike	28 safe /4	572 this	29 sit /4
11 striking	161 said	104 those	41 situation /2
14 strong	11 sail /5	38 though	53 six /5
14 study	67 same	67 thought	16 size /3
32 subject	14 sat	27 thousand	11 skill /2
19 success	14 satisfactory /2	13 thousands	21 slave /3
11 successful	64 save /3	75 three	54 small /3
132 such	41 saw	78 through	12 smile /4
12 suit	191 say /4	14 throughout	300 so
11 sum	33 school /4	17 thus	18 social /3
16 summer	31 sea /2	19 till	15 sold
14 supplies	12 seat /3	205 time	41 soldier /5
19 supply	24 second	27 times	152 some
18 support	17 section /3	2,924 to	40. something

TABLE 5	TABLE 6	TABLE 5	TABLE 6
① 68 today	14 sometimes	20 victory	16 summer
17 to-day	48 soon /2	29 view	11 summon /4
25 together	25 sort /3	13 village	45 supply /4
33 told	13 sound /5	12 voice	24 support /5
11 tomorrow	17 south /2	14 wait	22 suppose /2
12 tonight	34 speak /5	44 want	33 sure /3
16 tons	35 special /5	24 wanted	11 surprise /3
57 too	13 speech /2	12 wants	15 sweet /3
40 took	12 speed /5	214 war	25 system /7
17 total	12 spent	839 was	17 table /3
13 touch	21 spirit /3	11 wasn't	164 take /4
19 toward	12 spoke /2	39 water	33 talk /4
18 town	11 spring	104 way	21 task /2
11 trade	12 square /3	15 ways	20 tax /4
19 train	11 staff	529 we	19 teach /5
17 training	12 stage	13 weather	12 taught
13 trains	61 stand /3	25 week	22 tea
15 transportation	18 standard /3	15 weeks	71 tell /3
26 troops	22 start /3	113 well	12 tend /8
21 trouble	92 state /6	50 went	24 ten
30 true	18 station /3	305 were	22 term /2
30 truly	15 stay /3	15 west	13 terrible /2
17 trust	48 steel	253 what	11 territory /3
21 truth	22 step /3	16 whatever	17 test /4
14 try	58 still	32 wheat	194 than
11 trying	11 stock /2	237 when	31 thank /4
17 turn	15 stone /2	83 where	1,367 that /3
30 turned	16 stood	31 whether	7,310 the
13 twelve	20 stoop /2	454 which	319 their /2
30 twenty	15 stop /3	78 while	262 them /2
146 two	24 store /4	16 white	115 then
12 type	22 story /2	248 who	329 there /3
108 under	22 straight /5	45 whole	152 these
19 understand	28 strange /5	28 whom	495 they /4
12 unknown	31 street /2	42 whose	126 thing /2
21 unless	20 strength /2	51 why	99 think /3
50 until	26 strike /3	11 wide	22 third
16 unto	22 strong /4	11 wife	25 thirty /2
204 up	11 struggle /3	11 wild	572 this
129 upon	19 study /4	445 will	194 those
123 us	40 subject /4	13 willing	38 though
28 use <i>n</i>	12 submarine /2	17 win	75 thought /3
36 use <i>v</i>	14 substitute /3	11 winter	40 thousand /2
45 used	11 succeed /4	13 wise	75 three
12 using	34 success /5	28 wish	94 through /2
12 usual	16 suffer /3	727 with	20 throw /4
26 value	132 such	20 within	17 thus
14 various	23 suggest /6	70 without	19 till
145 very	20 suit /4	59 woman	232 time /2
15 vessels	11 sum	47 women	12 tire /3

TABLE 5	TABLE 6
15 won	2,924 to
14 wonder	88 today /2
17 won't	25 together
19 word	33 told
18 words	14 tomorrow/2
83 work	22 ton /3
13 working	12 tonight
12 works	57 too
103 world	40 took
11 worse	19 total /2
22 worth	24 touch /5
252 would	24 toward /2
15 wouldn't	20 town /2
21 write	19 trade /5
14 written	56 train /5
32 wrong	26 transport /3
59 year	14 travel /6
93 years	15 treat /6
23 yes	12 tree /2
33 yesterday	12 trench /2
68 yet	26 troops
775 you	36 trouble /5
41 young	60 true /2
214 your	29 trust /5
16 you're	22 truth /2
56 yours	25 try /2
12 yourself	54 turn /4
	13 twelve
	31 twenty /2
	146 two
	18 type /2
	109 under /2
	30 understand /3
	12 union /2
	13 universe /5
	12 unknown
	21 unless
	50 until
	16 unto
	207 up /3
	129 upon
	123 us
	28 use n
	100 use v /6
	19 usual /2
	13 utter /4
	38 value /5
	17 vary /3
	13 vast /3
	115 very

TABLE 6
18 vessel /2
22 victor /3
37 view /4
13 village
12 visit /4
18 voice /3
16 vote /4
12 wage /4
11 wagon /2
24 wait /3
12 walk /4
83 want /4
217 war /2
12 warm /5
850 was /2
16 waste /5
25 watch /3
49 water /3
119 way /2
537 we /3
12 weak /6
14 weather /2
40 week /2
17 weight /5
113 well
50 went
307 were /2
21 west /3
260 what /2
16 whatever
36 wheat /2
237 when
83 where
31 whether
454 which
79 while /2
16 white
248 who
52 whole /2
28 whom
42 whose
51 why
13 wide /2
15 wife /2
11 wild
464 will /6
20 win /3
17 window /2
14 winter /3
16 wire /5

TABLE 6

13	wise
38	wish /4
727	with
20	within
70	without
16	witness /5
59	woman
48	women /2
15	won
27	wonder /5
17	won't
12	wood /4
38	word /3
127	work /7
117	world /4
11	worry /3
15	worse /2
27	worth /3
267	would /2
17	wound /4
40	write /5
14	written
39	wrong /2
14	yard /2
152	year /2
23	yes
33	yesterday
68	yet
808	you /5
41	young
283	your /4

Note in Table 3 that almost exactly 500 words occur over 20 times. By ignoring words of frequency 20 or under Table 5 may thus be read as an alphabetic list of the 500 commonest words which make up about 2/3 of all ordinary speech.

See also note on "war words" at end of Table 3 (page 30).

Part 3—Syllables

Part 3 — Syllables

Relative frequency of the commoner syllables of English

As with the commoner words, the commoner syllables of English make up a strikingly large proportion of all ordinary discourse. To parallel the facts observed:

10,119 different particular words make up 100,000 total.

About 4,400 different syllables, on a 41 sound basis, make up 143,000 total.

117 words occur over 100 times, and make up 56.0% of the total.

220 syllables occur over 100 times, and make up 68.7% of the total.

1,027 words occur over 10 times, and make up 78.6% of the total.

1,370 syllables occur over 10 times, and make up 93.3% of the total.

The syllable is investigated in as much detail as hereafter reported because it affords the only constant, readily distinguished, and easily manipulated unit between simple sounds on the one hand and complete words on the other; and also because separate study of those consonant combinations occurring before and after the vowel of the syllable suffices to investigate practically all the characteristic sound combinations of English; leaving explicitly unstudied only those combinations occurring at the junction of syllables, much less uniform and characteristic, and sufficiently exhibited by the commoner words investigated.

Tables 7 and 8 following show the 220 commonest syllables which occur oftener than 100 times each in 100,000 words; first, arranged in order of frequency; second, classed by vowels and arranged in order of frequency under each vowel.

The fonetic notation adopted is the S S B key alphabet, strictly in harmony with the Revised Scientific Alphabet, shown in detail in Appendix A. Readers not familiar with the Revised Scientific Alphabet, Key 1 of the Standard Dictionary, should study this notation before examining the results hereafter reported.

The distinctive treatment accorded the commonest word or syllable of English, *the*, is discussed at length under sounds (pages 123 and 126).

Through the syllable data occasional syllables containing a or u are marked with a *, to call attention to the slightly variant sound of a or u which usually occurs before r. The precise nature of these variant sounds will be discussed in connection with the sound data (page 126).

Note that in such syllables as *bl n l pl nt* the syllabic *n* or *l* has vowel value, and is accordingly treated as the "vowel" of the syllable.

The 6 syllable tables which follow are each based on the 1,370 commonest syllables occurring oftener than 10 times in 100,000 words, which make up 93.3% of the total number of syllable occurrences. In view of the diversity of the material analyzed, and the more general character of syllables as compared with words, the conclusion seems warranted that these tables include most or all of those syllables likely to occur more than sporadically in any selection of 10,000 or even 100,000 words.

Study of the syllable, whether as a complete speech-unit or as a combining form, may focus on the vowel of the syllable, the initial sounds, or the final sounds. These tables exhibit the 1,370 commonest syllables under each of these 3 aspects.

Table 9, which presents the 1,370 commonest syllables classed by vowels, in order of frequency under each vowel, calls for no special comment. Table 10 is merely a conspectus of Table 9. In connection with the tables arranged according to initial or final sounds, however, certain structural characteristics of the English language should be observed.

One of the marked characteristics of English, of superlative importance in constructing a system of shorthand, is the tendency of certain consonant sounds to occur in combinations of 2, 3, and even 4, both before and after the vowel of the syllable in which they occur, spoken in a single voice impulse with the vowel. The double combinations are commonly known as consonant diphthongs.*

* Distinguish clearly between a digram, two letters for one sound, and a diphthong, two vowel sounds (in the case of a consonant diphthong, two adjoining consonant sounds) pronounced in one syllable.

TABLE 7 220 COMMONEST SYLLABLES, OCCURRING OFTENER THAN 100 TIMES IN 100,000 WORDS, IN ORDER OF FREQUENCY

7,310	fi	464	e	235	pør	153	bait	114	biz
4,001	ev	462	an	233	hur	152	fitz	113	kun
3,284	in	454	hwic	230	yür	152	lit	111	jen
3,280	and	446	so	228	for	152	hai	110	nev
3,217	i	433	frøm	226	pro	147	kud	110	e
3,167	ø	414	had	225	kem	147	løŋ	108	til
3,152	tü	412	wun	224	ful	147	hír	108	gud
2,353	in	402	ment	222	tám	146	ver	107	par
2,084	ør	394	haz	221	mor	145	køz	107	muç
1,625	ri	386	bl	221	wør	143	rát	106	stand
1,416	it	386	øn	218	pl	142	bør	106	wurld
1,346	fiat	382	men	218	man	141	mék	106	ens
1,286	iz	379	ørz	212	lønz	141	ij	105	tørz
1,259	d	378	ar	211	wè	141	im	105	sád
1,201	li	343	n	210	nai	140	pè	104	fiöz
1,136	fër	341	má	210	mè	136	tiv	104	sit
967	bi	335	fiar	207	sè	134	did	104	ak
923	len	333	up	206	tri	133	lák	104	egz
907	ed	332	at	200	sl	132	suç	104	ønz
862	yü	329	bin	200	nè	132	ørn	101	ik
850	wøz	328	wur	194	pøs	131	furst	98,149	[220]
841	wid	323	fër	194	pur	130	pri		
835	di	308	ev	193	ri	130	mi		
830	ti	306	mi	188	fi	129	hiŋ		
816	øn	305	tu	187	ni	129	mø		
783	az	295	eks	186	est	127	kæl		
707	o	293	its	186	i	127	get		
696	hi	291	kan	184	fiar	127	u		
686	a	290	dør	182	nü	126	møn		
679	øi	285	him	181	grèt	126	am		
675	en	282	us	181	is	125	hwar		
658	hav	281	wud	179	to	124	mit		
644	bá	277	sum	179	go	124	wurk		
642	ar	277	hwet	179	méd	124	ørđ		
621	bi	276	if	178	sur	123	part		
612	at	276	on	177	ad	122	tin		
602	ør	270	kum	171	tøk	122	wel		
596	net	268	yu	166	kø	121	giv		
575	tør	266	dè	166	self	121	let		
572	fiis	264	nes	166	les	120	sent		
570	el	264	l	165	must	120	su		
556	køn	263	si	162	ent	120	sub		
537	wi	262	fem	161	sed	120	lal		
529	ez	261	dis	161	çur	119	tøl		
517	but	258	uá	160	tè	119	füđ		
517	hiz	252	hü	155	most	119	nt		
478	fè	251	vør	155	ø	117	mil		
478	no	246	hwen	154	le	116	mo		
470	wil	239	dü	154	af	115	tiz		
466	un	238	pt	153	po	115	fien		
63,814		79,914		89,468		96,012			

IN ORDER OF FREQUENCY UNDER EACH VOWEL.

	u	e	o	u	ü	i	é	ai	ü							
but	517	e	3167	o	707	tu	305	tü	3152	á	1259	ar	378	nü	182	
un	466	er	2084	no	478	wud	281	yü	862	bi	644	at	332			
wun	412	en	923	so	446	yu	268	hi	252	mi	341	na	210			
up	333	ter	575	on	276	ful	224	dü	239	tam	222	bat	153			
wur*	328	el	570	for	228	çur	161	yür	230	rat	143	ha	152			
us	282	en	386	pro	226	kud	147			lak	133					
sum	277	erz	379	mor	221	u	127			säd	105					
kum	270	der	290	to	179	sud	119									
uf	258	var	251	go	179	gud	108									
hur*	233	per	235	most	155											
pur*	194	enz	212	po	153											
sur	178	ber	142	mo	116											
must	165	ern	132	foz	104											
suc	132	mæ	129													
furst*	131	kæl	127													
wurk*	124	mæn	126													
su	120	erd	124													
sub	120	tel	119													
kun	113	terz	105													
muç	107	enz	104													
wurld*	106															
	<u>4,866</u>		<u>10,180</u>		<u>3,468</u>		<u>1,740</u>		<u>4,735</u>		<u>2,847</u>		<u>0</u>		<u>1,225</u>	<u>182</u>
	21		20		13		9		5		7		0		5	1

TABLE 8. 220 COMMONEST SYLLABLES CLAST BY VOWELS,

fi	n,l	a	u	e	ɛ	i	ɪ	o	ə	
fi 7,310	bl 386	and 3280	ar 642	ed 907	de 478	in 3284	bi 967	ev 4001	fər 1136	
	n 346	fat 1346	part 123	en 675	ɛ 464	i 3217	hi 696	wɛz 850	əl 679	
	l 264	az 783	par 107	ez 529	dɛr 323	ɪj 2353	wɪ 537	ɛn 816	ər 602	
	pl 218	a 686		ment 402	dɛ 266	ri 1623	mɪ 306	nɛt 596	wɛr 221	
	nt 119	hav 658		men 382	wɛ 211	it 1416	pl 238	kɛn 556	ɛŋ 147	
		at 612		ev 308	mɛ 210	iz 1286	sɪ 200	frem 433	kɛz 145	
		an 462		eks 295	sɛ 207	li 1201	rt 193	hwɛt 277		
		had 414		nes 264	nɛ 200	wɪf 841	ʃt 188	kɛm 225		
		haz 394		dɛm 262	grɛt 181	dɪ 835	f 186	pɛs 194		
		dɛr* 335		hwɛn 246	mɛd 179	tɪ 830	dɪz 152	kɛ 166		
		kan 291		ɛst 186	tɛk 171	bɪ 621	hɪr 147	ə 155		
		man 218		sɛlf 166	tɛ 160	dɪs 572				
		dɛn 184		lɛs 166	lɛ 154	hɪz 517				
		ad 177		ɛnt 162	mɛk 141	wɪl 470				
		af 154		sɛd 161	pɛ 140	hwɪç 454				
		əm 126		vɛr 146		bɪn 329				
		hwar* 125		gɛt 127		ɪts 293				
		ʃal 120		wɛl 122		hɪm 285				
		stand 106		lɛt 121		ɪf 276				
		ak 104		sɛnt 120		sɪ 263				
				dɛn 115		dɪs 261				
				jɛn 111		tɪrɪ 206				
			nɛv 110		nɪ 187					
			e 110		ɪs 181					
			ɛns 106		lɪt 152					
			ɛgz 104		ɪj 141					
					ɪm 141					
					tɪv 136					
					dɪd 134					
					pɪrɪ 130					
					mɪ 130					
					hɪj 129					
					mɪt 124					
					tɪn 122					
					gɪv 121					
					mɪl 117					
					tɪz 115					
					bɪz 114					
					tɪl 108					
					sɪt 104					
					ɪk 101					
	7,310									
	I									
Total	98,149	1,330	10,575	872	6,403	3,485	23,922	3,810	8,269	2,930
	220	5	20	3	26	15	41	11	11	6

By analogy the triple combinations may be called consonant trithongs, and the exceptional quadruple combinations (as in *tempt's*, *sixths*, *world's*, etc) quadrithongs. The combinations occurring before the vowel of their syllable may well be named preceding consonant dithongs and trithongs, and the combinations occurring after the vowel of their syllable following consonant dithongs, trithongs, or quadrithongs.

Preceding consonant compounds are formed chiefly by *l* *r* and *w* after other consonants, and by *s* before; the trithongs having always the form of *s* preceding a dithong—that is *s'l*- (*s*-consonant-*l*-vowel), *s'r*-, or *s'w*-. Following consonant compounds are more varied and numerous. The more important of these are formed by *s* and *z*, *t* and *d*, and with *l* and *r*; less often by *h*, *m*, *n*, *ŋ*.

Appendix B tabulates 57 consonants or consonant compounds which occur in English preceding the vowel of their syllable, of which 51 occur among the commonest syllables here reported; 181 consonants or consonant compounds which occur following the vowel of their syllable, of which 96 occur among the commonest syllables; also 51 syllabic consonant combinations, of which 22 occur among the commonest syllables. These appended tables will repay careful study in this connection altho their data are not directly quantitative.

Table 11 presents the 1,370 commonest syllables in fonetic order, thus bringing together those syllables which begin with the same sound or sound combination. Table 12, which summarizes Table 11, shows at a glance the comparative frequency of the various preceding consonant compounds.

Table 13 presents the 1,370 commonest syllables in reverse fonetic order (riming dictionary order), thus bringing together those syllables which end with the same sound or sound combination. Table 14 summarizes Table 13, showing similarly the comparative frequency of the various following consonant compounds.

So far as *l* can determine the results here reported constitute the first and only reliable quantitative data with respect to the characteristic sound combinations, other than words, of English. The tables follow.

TABLE 9 1,370 COMMONEST SYLLABLES OCCURRING OFTENER THAN
10 TIMES IN 100,000 WORDS, CLAST BY VOWELS, IN ORDER
OF FREQUENCY UNDER EACH VOWEL

n		l		a		land		par*	
n	343	bl	386	and	3280	akt	36	bagk	19
nt	119	l	264	fat	1346	askt	36	kam	19
vn	98	pl	218	az	783	ab	34	pak	18
zn	59	plz	34	a	686	av	34	blak	18
nd	44	lz	30	hav	658	tab	33	bar	18
pn	41	tl	28	at	612	tak	32	gram	18
znz	32	ld	28	an	462	taks	32	farz*	18
nz	20	dl	20	had	414	raf	32	skwar*	18
dn	16	gl	20	haz	394	handz	32	vans	17
kn	15	kl	17	fat*	335	par	30	aj	17
		klz	15	kan	291	mas	30	task	16
		blz	13	man	218	nał	29	fast	16
				fan	184	aj	29	lak	16
				ad	177	trakt	28	dam	15
				af	154	fam	28	gał	15
				am	126	van	27	gal	15
				hwar*	125	haps	26	rap	15
				sal	120	plan	25	trak	14
				stand	106	pard*	25	kat	14
				ak	104	mar	25	çap	14
				mat	90	bad	24	flat	13
				kar	88	haŋk	24	fakts	13
				bak	87	ap	24	vast	13
				last	86	kant	23	sam	13
				fak	80	ar*	23	hab	13
				hap	69	al	23	paç	12
				kap	66	klas	22	pan	12
				pas	65	war*	22	ban	12
				haf	63	glad	21	kiard*	12
				bat	58	fan	21	staf	12
				fakt	58	naç	21	standz	12
				hand	57	fats	21	ag	12
				val	53	sak	21	trast	11
				mand	53	han	21	graf	11
				trans	51	as	21	7 farz*	11
				sat	50	pat	20	lat	11
				past	47	trav	20	wag	11
				prak	44	nan	20	akts	11
				gan	42	mag	20		
				ask	37	planz	19		
	<u>787</u>		<u>1,073</u>						<u>13,453</u>
	10		12						120

a	e	jekt	66	sep	32	test	20
ar	ed	sev	64	et	32	spek	20
part	en	el	63	twen	31	streñh	20
par	ez	gen	62	ven	31	nent	20
larj	ment	yes	57	hwef	31	mes	20
far	men	sek	56	preš	30	rev	20
gard	ev	hed	56	⑧ter	30	reg	19
kar	eks	pen	55	sents	30	tempt	18
garj	nes	selvz	55	ef	30	mend	18
farm	ñem	pres	53	lekt	29	er	18
bard	hwen	best	52	lent	29	plez	17
mar	est	tem	52	help	29	dek	17
hard	self	sez	52	dres	28	kwest	17
fa	les	went	50	vest	28	frendz	17
hart	ent	left	48	vent	28	mez	17
bar	sed	tend	46	zent	28	eh	17
start	ver	ker	46	čer	28	te	16
arm	get	kwes	45	prest	27	def	16
gar	wel	hev	45	fen	27	gres	16
art	let	nekst	44	vel	27	felt	16
karz	sent	ej	44	sted	27	net	16
mark	ñen	sel	43	res	27	med	16
lar	jen	end	43	elz	27	ents	16
parts	nev	dens	42	fens	26	ded	15
marks	e	sept	41	meh	26	se	15
yardz	ens	rekt	41	west	26	sel	15
har	egz	send	40	met	25	selz	15
garjd	tel	bet	38	her	25	jes	15
a	prez	tent	38	els	25	nek	15
	sen	gerf	38	fend	24	ren	15
	ek	rep	38	per	23	wef	15
	ments	ber	36	tens	23	bred	14
	es	dren	36	kept	23	kwent	14
	ten	pekt	35	frend	23	fed	14
	set	spekt	35	kred	22	step	14
	em	fel	35	ref	22	seš	14
	dent	speš	35	des	21	jekts	14
	mem	sens	35	den	21	twelv	13
	red	dem	34	ket	21	tes	13
	genst	fer	34	freš	21	dev	13
	lek	rest	34	fek	21	dents	13
	fekt	jest	33	ček	21	gets	13
	ses	held	33	jek	21	spes	13
	rek	dred	32	lem	21	jent	13
	yet	ves	32	pend	20	jents	13
<u>1,560</u>							
28							

her	II	o	vot	25	u	u		
		o 707	forh	24	tu	305	tŭ	3152
		no 478	oz	24	wud	281	yŭ	862
		so 446	stor	23	yu	268	hŭ	252
		on 276	rodz	21	ful	224	dŭ	239
		for 228	kort	20	çur	161	yŭr	230
		pro 226	bord	19	kud	147	9 hŕŭ	96
		mor 221	od	19	u	127	yŭrz	56
		to 179	klos	19	šud	119	yŭz	54
		go 179	klozd	19	gud	108	fŭd	53
		most 155	kold	18	put	73	šŭr	53
		po 153	roz	18	wu	57	sŭn	48
		mo 116	post	17	luk	56	yŭs	48
		řoz 104	bro	17	ur	52	yŭzd	45
		old 84	wont	17	çu	47	hŭz	42
		port 77	gro	15	tuk	40	mŭv	38
		hom 69	gron	15	yur	37	nŭn	37
		dont 67	gold	15	buks	34	trŭ	30
		hol 61	sold	15	stud	28	hŭm	28
		řo 60	zors	15	çurz	26	trŭps	26
		lo 60	bor	13	zu	23	skŭl	25
		fors 59	goz	13	fut	19	pŭr	24
		sol 58	řro	13	çurd	19	rŭm	24
		hold 51	kloz	12	yurz	19	klŭd	23
		lon 50	glo	12	buk	18	prŭv	21
		řo 48	spok	12	hud	18	trŭh	21
		por 47	ston	12	gudz	17	stŭpt	19
		kors 46	řon	12	flu	16	mŭvd	18
		boh 45	řol	12	lukt	16	jŭ	16
		non 45	fo	11	yut	16	klŭ	14
		ro 44	fon	11	stru	11	rŭl	13
		ko 42	vo	11	ud	11	yŭn	13
		hop 41	ho	11			tŭr	12
		rod 37					prŭvd	11
		poz 35					blŭ	11
		told 34					lŭz	11
		kol 34					wŭnd	11
		noz 32						
		tro 30						
		ports 29						
		pozd 28						
		not 28						
		do 27						
		forst 27						
		trol 25						
		<u>12,350</u>		<u>5,418</u>		<u>2,303</u>		<u>5,676</u>
		90		77		31		36

ä		é		ai		ü			
d	1259	láz	26	pént	51	air	378	nü	182
bä	644	fán	25	béz	29	ait	332	fü	100
má	341	strák	25	lé	25	nai	210	mü	55
tám	222	tá	24	plé	22	bait	153	dü	51
rát	143	hánd	24	él	20	hai	152	bü	49
lák	133	plád	23	vés	19	dain	99	dür	47
sád	105	kwárd	23	bé	15	pai	77	düs	39
há	100	fár	23	stré	15	haus	70	hü	35
láf	91	zár	23	jé	14	fand	64	kü	34
mát	85	dá	22	çés	11	kau	52	vü	34
hwäl	80	äl	22			mant	43	sü	34
nát	64	pláz	20			hai	40	nüz	33
fát	62	áv	20			ränd	39	lü	31
lät	61	vás	17			kant	37	tü	28
áz	61	sádz	17			airz	36	kür	28
fánd	60	hwát	17			pandz	26	düst	27
kánd	53	nán	16			dat	26	tüd	24
lán	53	mán	16			grund	25	süt	21
hwá	51	táz	15			flair	25	sum	21
fáv	49	flá	15			pand	24	lüt	20
sá	48	fás	15			haiz	23	tüt	19
mánd	48	ráv	15			nains	22	püt	17
fá	45	práz	14			sañ	21	tün	17
trá	45	táp	14			nainst	20	gü	17
prás	43	krá	14			tain	19	tür	11
támz	42	rád	14			krand	15		
plá	39	ráz	14			sand	11		
lá	39	wád	14			laud	11		
dráv	37	wár	14						
fád	37	ád	14						
ázd	37	váz	13						
kwár	35	mäl	13						
tár	34	frát	12						
vád	34	spát	12						
sát	32	wáf	12						
çáld	32	tárd	11						
prá	30	dád	11						
rá	30	ráts	11						
ám	30	wáld	11						
kwát	28								
vá	28								
mälz	28								
lánz	27	<u>5,258</u>		<u>221</u>		<u>2,048</u>		<u>973</u>	
sáz	26	84		10		28		25	

TABLE 10 SUMMARY OF TABLE 9

Vowel sound	Occurrences	Items
n	787	10
l	1,073	12
<i>n, l</i>	1,860	22
a	13,453	120
ɑ	1,560	28
e	12,076	204
ɛ	6,126	99
i	28,388	179
ɪ	6,507	101
ə	9,919	65
θ	4,277	51
u	7,773	119
ə	12,350	90
o	5,418	77
u	2,393	31
ū	5,676	36
<i>Vowel</i>	115,916	1,200
ɪ	5,258	84
ɛ	221	10
aɪ	2,048	28
u	973	25
<i>Diphthong</i>	8,500	147
ɪɪ	7,310	1
<i>n, l</i>	1,860	22
<i>Vowel</i>	115,916	1,200
<i>Diphthong</i>	8,500	147
Total	133,586	1,370

u	ø	o	u	ū	í	é	ai	ü
					plá 39 plád 23 pláz 20	plé 22		
		pro 226		prūv 21 prūvd 11	prá 30 prás 43 práz 14			
pub 83 pur* 194 purts* 12	pø 72 pøs 61 pør 235 perz 13	po 153 post 17 poz 35 pozd 28 por 47 port 77 ports 29	pu 73	pūr 24		pēt 51	pai 77 pand 24 pandz 26	pür 17
blud 12				blū 11				
brud 13		bro 17						

62 *Relative Frequency of English Speech Sounds*

	n, l	a	ɑ	e	ɛ	i	ɪ	o	ɔ
b	bl 386 blz 13 <u>5,121</u> 51	bat 58 bad 24 bak 87 ban 12 banƙ 19 bar 18	bar 23 bard 31	bet 38 bed 11 beg 11 best 52 ber 36	bɛ 54 bɛs 11	bi 62 bit 20 big 55 biz 114 biʃ 16 bin 329 bil 82 bilt 26 bild 47	br 967 brt 12	bed 67 bem 34 bendz 18	bɛt 11 bɛrn 11
tr	<u>859</u> 28	trak 14 trakt 28 trav 20 trast 11 trans 51		trenç 12	trɛ 54 trɛt 12 trɛd 15 trɛn 37 trɛnz 13	tri 206 trib 17 trik 26 triz 24	trɪ 12 trɪt 14 trɪm 14		
tw	<u>104</u> 3			twen 31 twelv 13			twɪn 60		
t	tl 28 <u>8,123</u> 77	tab 33 tak 32 taks 32 task 16		te 16 tekt 11 tes 13 test 20 tem 52 tempt 18 ten 87 tent 38 tend 46 tens 23 tel 100 ter 30	tɛ 160 tɛt 20 tɛk 171 tɛks 14 tɛn 43 tɛnd 31 tel 21	ti 830 tik 68 tif 11 tiv 136 tivz 23 tis 65 tiz 115 tis 16 tij 20 tin 122 til 108	ti 42 tiç 19 tin 27	tel 11 ter 15	tɛt 12 tɛk 23

u	ə	o	u	ü	i	é	ai	ü
but 517	bən 12	boñ 45	buk 18		bá 644	bé 15	baut 153	bü 49
buv 25	bər 142	bor 13	buks 34			béz 29		
bur* 11	bərd 16	bord 19						
burn* 12	berdz 53							
trub 37	trə 14	tro 30		trü 30	trá 45			
trust 31	trəl 20	trol 25		trüps 26				
				trüh 21				
tue 11	tə 63	to 179	tu 305	tü 3152	tá 24		tain 19	tü 28
tuç 20	təm 14	told 34	tuk 40	tür 12	táp 14			tüt 19
tunz 16	tən 13				táz 15			tüd 24
tur* 57	tənt 40				tám 222			tün 17
turmz* 17	təns 36				támz 42			tür 11
turn* 47	təl 119				tár 34			
turnd* 41	tər 575				tárd 11			
	terd 29							
	terz 105							

u	ø	o	u	ü	i	é	ai	ü
					dräv 37			
duk 22	dø 24	do 27		dü 23	dä 22		dat 26	dü 31
dukt 15	døm 24	dont 67			däd 11		dän 99	düs 39
dus 48	dør 29							düst 27
duz 69	dörd 27							dür 47
dun 40	dörz 33							
		klos 19		kliü 14				
		kloz 12		kliüd 23				
		klozd 19						
					krä 14		kraud 15	
	kwøl 20				kwät 28			
					kwär 35			
					kwärd 23			

66 *Relative Frequency of English Speech Sounds*

	n, l	a	ɑ	e	ɛ	i	ɪ	ɛ	ə		
k	kn	15 kap	66 kor	43 kept	23 kē	89 ki	14 kɪp	47 kē	166 kət	11	
	kl	17 kat	14 korz	18 ket	21 kēt	33 kɪŋ	13	kɛp	21 kəa	145	
	$\frac{3,724}{60}$	klz	15 kam	19	ker	46 kēs	71 kil	15	kest	26 kəl	47
			kan	291		kēm	82		kests	11 kəld	34
			kant	23					kəm	225 kər	34
	ka:	88						kən	556 kərd	38	
								kəŋ	12 kərn	14	
								kəl	20		
								kər	26		
gl		glad	21								
	$\frac{33}{2}$										
gr		graf	11		gres	16 grē	13		grɪ	30	
	$\frac{335}{10}$	gram	18			grēt	181		grɪz	11	
g	gi	20 gaf	15 gar	19 get	127 gē	31 giv	121		gət	55	
		gan	42 gard	47 gets	13 gēt	13 givz	13		gən	20	
		gal	15	gef	38 gev	36 gin	38				
				gest	11 gējd	11					
				gen	62 gēnd	11					
				genst	73						
fl		flat	13								
	$\frac{69}{4}$										
fr				frel	21 frēd	11		fri	50	frəm	433
	$\frac{618}{8}$			frend	23						
				frendz	17						

u	ø	o	u	ü	ä	é	ai	ü
kup 12	kø 36	ko 42	kud 147		känd 53		kain 52	ki 34
kut 23	køl 127	kol 34					kaint 37	kür 28
kuv 49		kold 18						
kus 27		kort 20						
kum 270		kors 46						
kumz 32								
kun 113								
kul 40								
kur* 45								
		glo 12						
		gro 15					gränd 25	
		gron 15						
guv 78	gøn 27	go 179	gud 108					gü 17
gun 56	gøl 14	goz 13	gudz 17					
gunz 23	gar 33	gold 15						
guri* 32								
guriz* 18								
			flu 16		flä 15		flaur 25	
frunt 51					frät 12			

u	ø	o	u	u	i	é	ai	ü
fun 16 fund 11 fur* 81 furst* 131 furm* 18	fæ 24 fær 23 fert 16	fo 11 fon 11 for 228 forh 24 fors 59 forst 27	fut 19 fúl 224	fúd 53	fá 45 fát 62 fád 37 fáv 49 fás 15 fán 25 fánd 60 fár 23		fand 64	fu 100
vur* 34 vuct* 12 vurs* 11	vø 12 vøl 16 vær 251	vo 11 vot 25			vá 28 våd 34 vås 17 váz 13	vés 19		vü 34
		hro 13	⑨ hrú 96					
hur* 37 hurd* 22							hai 40	
ðus 17	ðær 97	ðo 60 ðoz 104						

u	ø	o	u	ū	i	é	ai	ü
		spok 12			spåt 12			
struk 48 strukt 19 strug 11			stru 11		stråk 25	strø 15		
stur* 11	stønt 18 støns 21	ston 12 stor 23	stud 28	stūpt 19				
				skūl 25				

u	e	o	u	ü	á	é	ai	ü
su 120	sø 16	so 446		sün 48	sá 48		saiñ 21	sü 34
sub 120	sen 40	sol 58			sát 32		saiñd 11	süt 21
suk 47	senz 14	sold 15			sád 105			süm 20
sug 23	ser 52				sádz 17			
suf 16	serz 27				sáz 26			
sus 19								
suç 132								
sum 277								
sump 12								
sun 24								
sur* 178								
surv* 14								
surç* 14								
surñ* 14								
zult 37	zand 27	zors 15			zár 23			
zurv* 20	zandz 13							

	u	ø	o	ɹ	ū	ɨ	é	ai	ü
ſus	27	ſan 92 ſenz 212 ſel 56	ſo 48 ſon 12 ſol 12	ſud 119	ſūr 53				
		ʒen 24		ʒu 23					
		çen 35 çenz 17		çu 47 çur 161 çurd 19 çurz 26		çald 32	çes 11		
jus just juj jur*	37 100 23 15	jæn 15 jær 30 jærz 36			jū 16		jé 14		
muf mus must muç mun munh munh muḡ mul mur*	31 36 165 107 60 28 35 46 14 30	mæ 129 mæn 126 mæl 20 mær 29	mo 116 most 155 mor 221		mūv 38 mūvd 18	mā 341 māt 85 mān 16 mānd 48 māl 13 mālz 28		mant 43	mü 55

76 *Relativ Frequency of English Speech Sounds*

	n, l	a	ɑ	e	ɛ	i	ɪ	ə	o
n	See page 80 <u>3,527</u> 51	naŋ 29 naç 21 nan 20		net 16 nek 15 nekst 44 nev 110 nes 264 nest 11 nent 20	nē 200 nēt 21 nēm 48 nēmz 14	ni 187 nit 30 nid 13 nif 15 niz 15 niš 30 nij 27	ni 23 nid 48 nidz 21 nir 61	nēt 596 nēm 28 nēn 20 nol 32	nēr 46 nērš 16
l	See page 80 <u>4,027</u> 63	lat 11 lak 16 last 86 land 36	lar 18 larj 69	let 121 lek 73 lekt 29 left 48 les 166 lej 13 lem 21 lent 29	lē 154 let 70 led 16	li 1201 lib 30 lit 152 lik 76 liv 71 livd 11 lis 18 list 43 liš 16 lij 26 lim 35 lij 28	li 22 lid 27 lif 11 liv 71 livz 11 lis 17 list 22	lēt 18 lē 35 lest 28 lez 16 leŋ 147	
r	<u>3,314</u> 53	rap 15 raf 32		rep 38 red 79 rek 69 rekt 41 reg 19 ref 22 rev 20 res 27 rest 34 rez 12 rej 12 ren 15	rē 99 rēt 32 rēd 16 rēs 11 rēz 11 rēj 35 rel 39	ri 1625 rit 22 rid 17 riz 26 riç 12 rij 12 rij 14	ri 193 rid 43 riç 24 riçt 13 rin 13 rtr 13	rēŋ 32	

	u	ø	o	u	ü	á	é	ai	ü				
nuf	44	nø	27	no	47	nūn	37	nát	64	nai	21	nü	18
nuf	61	nøns	22	not	28			nán	16	nains	22	nüz	33
num	58	nøl	63	noz	32					nanst	20		
nun	17	ner	27	non	45								
luv	43	lø	15	lo	60	luz	11	lá	39	lé	25	lud	11
lurn*	15	lør	73	lon	50	lukt	56	lát	61			lü	31
lurnd*	16							lák	133			lüt	20
								láf	91				
								láz	26				
								lán	53				
								lánz	27				
rub	12	rø	75	ro	44	rūm	24	rá	30			rand	39
ruš	11	røl	25	rod	37	rūl	13	rát	143				
run	31			rodz	21			ráts	11				
				roz	18			rád	14				
								rávd	15				
								ráz	14				

78 *Relative Frequency of English Speech Sounds*

	n, l	a	ɑ	e	ē	i	ɪ	o	ē
w		wag 11 war* 22		wed 15 west 26 went 50 wel 122 welh 11	wē 211 wēt 35 wēst 15 wēz 30 wēj 11	wit 21 wiŋ 841 wiz 69 wiŋ 30 wim 48 win 50 wil 470	wi 537 wik 42 wiks 16	wēz 850 wēç 18	wē 5 wēt 7 wēnts 1 wēr 22 wērd 1 wērm 1
y			yardz 16	yet 68 yes 57			ytr 60 ytrz 93	yend 19	
hw		hwar* 125		hwed 31 hwen 246		hwic 454	hwit 38	hwet 277	
h		hap 69 haps 26 hab 13 had 414 haf 63 hav 658 haz 394 han 21 hand 57 handz 32	hor 15 hart 25 hard 31	hed 56 hev 45 hens 12 help 29 held 33 helh 12 her 25	het 11	hi 14 his 26 hiz 517 him 285	ht 696 htr 147	hes 16	hers 3

u	ø	o	u	ū	i	é	a	ü
wun 412 wuns 59 wur* 328 wurd* 19 wurdz* 18 wurk* 124 wurks* 13 wurh* 23 wurs* 11 wurd* 106 wurdz* 11	werd 47	wont 17	wu 57 wud 281	wünd 11	wád 14 wáf 12 wáz 26 wáld 11 wár 14			
yug 43	yæn 67 yænz 38 yær 21		ÿu 268 ÿut 16 ÿur 37 ÿurz 19	ÿū 862 ÿūs 48 ÿūz 54 ÿūzd 45 ÿūn 13 ÿūr 230 ÿūrz 56				
					hwá 51 hwát 17 hwál 80			
hvn 26 hur* 233 hurd* 31	hær 11	ho 11 hop 41 hom 69 hol 61 hold 51	hud 18	hū 252 hūz 42 hūm 28	há 100 hánd 24		ha 152 has 70 haz 23	hü 35

80 *Relative Frequency of English Speech Sounds*

	n, l	a	ɑ	e	ɛ	i	r	o	ɔ
vowel	n 343	a 686	ɑ 11	e 110	ɛ 464	i 3217	r 186	o 155	ɔ 61
	nt 119	ap 24	ar 642	et 32	et 97	it 1416	rt 23	op 88	ot 16
45.371	nd 44	ab 34	art 19	ets 12	ed 19	its 293	iv 27	ob 95	of 72
152	nz 20	at 612	arm 22	ed 907	ej 21	id 86	ist 13	ot 67	ol 679
	l 264	ad 177		ek 99	er 20	ik 101	tz 56	ok 12	or 602
	ld 28	ak 104		eks 295		if 276	rc 63	eg 16	
	lz 30	akt 36		egz 104		iv 14	trz 11	of 96	
		akts 11		ef 30		is 18		ov 4001	
		ag 12		ev 308		ist 48		on 816	
		af 154		eh 17		ists 21		ol 35	
		av 34		es 94		iz 1286			
		as 21		est 186		izm 30			
		ask 37		ests 11		is 84			
		askt 36		ez 529		ist 19			
		az 783		ej 44		ij 141			
		aj 29		em 86		im 141			
		am 126		en 675		in 3284			
		an 462		ent 162		in 2353			
		and 3280		ents 16		ingz 53			
		an 17		end 43		il 25			
		al 23		ens 106					
		ar* 23		el 63					
				els 25					
				elz 27					
				er 18					
	848	6,721	694	3,999	621	13,069	379	5,381	1,430
	7	22	4	25	5	20	7	10	5
126,276	1,860	13,453	1,560	12,076	6,126	28,388	6,507	9,919	4,277
1,369	22	120	28	204	99	179	101	65	51
	7,310 = ft								
	I								
	133,585								
	1,370	Total							

	u	ø	o	u	ū	á	é	u	ü
vp	333	ø	316	o	707	u	127		
vt	22	øpt	15	od	19	ud	11		
ukts	21	øt	25	oz	24	ur	52		
urf	258	ød	35	on	276				
vs	282	øk	49	old	84				
um	25	øz	18						
un	466	øn	386						
ul	16	ønt	21						
ur*	53	ønd	26						
urk*	13	øns	41						
		ønz	104						
		øl	570						
		ølz	36						
		ør	2084						
		ørt	21						
		ørd	124						
		ørz	379						
		ørn	132						
	<u>1,489</u>	<u>7,233</u>	<u>1,110</u>	<u>190</u>		<u>1,443</u>	<u>20</u>	<u>744</u>	
	10	18	5	3		7	1	3	
	<u>7,773</u>	<u>12,350</u>	<u>5,418</u>	<u>2,303</u>	<u>5,676</u>	<u>5,258</u>	<u>221</u>	<u>2,048</u>	<u>973</u>
	119	90	77	31	36	84	10	28	25

TABLE 12 SUMMARY OF TABLE II

Initial sound	Occurrences	Items	Initial sound	Occurrences	Items
pl	460	16	spl	11	1
pr	1,061	24	spr	15	1
p	3,242	59	sp	280	13
bl	111	5	str	261	12
br	147	8	st	617	19
b	5,121	51	skr	18	1
tr	859	28	skw	18	1
tw	104	3	sk	36	2
t	8,123	77	sm	54	1
dr	191	8	sl	13	1
dw	12	1	sw	18	1
d	3,657	54	s	5,188	90
kl	210	11	z	393	14
kr	175	10	ʒ	2,008	21
kw	281	13	ʒ	47	2
k	3,724	60	ç	600	19
gl	33	2	j	659	21
gr	335	10	m	5,514	74
g	1,461	36	n	3,527	51
fl	69	4	l	4,027	63
fr	618	8	r	3,314	53
f	4,048	71	w	5,553	51
v	1,364	38	y	2,130	21
hr	184	3	hw	1,319	9
h	554	11	h	5,051	48
ht	4,090	16	<i>Consonant</i>	80,905	1,217

Initial sound	Occurrences	Items
n	526	4
l	322	3
<i>n, l</i>	848	7
a	6,721	22
ɑ	694	4
e	3,999	25
ē	621	5
i	13,069	20
ɪ	379	7
ə	5,381	10
ə̃	1,430	5
u	1,489	10
ə	7,233	18
o	1,110	5
u	190	3
ɯ		
<i>Vowel</i>	42,316	134
ɨ	1,443	7
ɨ̃	20	1
ai	744	3
<i>Diphthong</i>	2,207	11
ɨi	7,310	1
<i>Consonant</i>	80,905	1,217
<i>n, l</i>	848	7
<i>Vowel</i>	42,316	134
<i>Diphthong</i>	2,207	11
Total	133,586	1,370

u	ø	o	u	ū	á	é	ai	ü
dukt 15 strukt 19			lukt 16					
							nainst 20	
furst* 131		forst 27						
just 100 must 165 trust 31		post 17 most 155						düst 27

u	ø	o	u	ū	d	ē	ai	i
frunt 51	tent 21 tēt 40 stant 18	dont 67 wont 17				pēnt 51	kant 37 mant 43	
zult 37								
vurt ^o 12	tort 21 fōrt 16	port 77 kort 20						

92 *Relative Frequency of English Speech Sounds*

	n, l	a	ɑ	e	ɛ	i	ɪ	ə	ɐ
jd $\frac{11}{1}$					gɛjd 11				
rmd $\frac{20}{1}$									fɛrmd 20
md $\frac{26}{1}$							stmd 26		
rmd $\frac{57}{2}$									
nd $\frac{4,230}{28}$		and 3280 stand 106 mand 53 land 36 hand 57		end 43 pend 20 tend 46 fend 24 send 40 mend 18 frend 23	tɛnd 31 gɛnd 11			yend 19	
rld $\frac{106}{1}$									
ld $\frac{409}{13}$				held 33		bild 47 fild 12	fild 23		kɛld 34

u	ø	o	u	fl	d	é	at	ü
turnd* 41 lurnd* 16								
fund 11 ænd 26 zænd 27				wünd 11	kánd 53 fánd 60 mánd 48 hánd 24		pánd 24 fánd 64 sánd 11 ránd 39 gránd 25	
wurld* 106								
		old 84 told 34 kold 18 gold 15 sold 15 hold 51			çáld 32 wáld 11			

100 *Relative Frequency of English Speech Sounds*

	n, l	a	ɑ	e	ɛ	i	ɪ	ə	ɐ
ps $\frac{79}{3}$		haps 26				Sips 27			
kts $\frac{59}{4}$		akts 11 fakts 13		jekts 14					
sts $\frac{43}{3}$				ests 11		ists 21		kosts 11	
nts $\frac{181}{6}$				ents 16 dents 13 sents 30 jents 13 ments 97					wents 12
rts $\frac{58}{3}$			raits 17						
ts $\frac{350}{5}$		faits 21		ets 12 gets 13		its 293			
rks $\frac{30}{2}$			marks 17						
ks $\frac{480}{8}$		taks 32		eks 295	teks 14 meks 26	siks 49	wks 16	preks 14	

Syllables

u	ø	o	u	û	i	é	ai	ü
				trûps 26				
ukts 21								
purts* 12		ports 29						
					rîts 11			
wurks*13								
			buks 34					

102 *Relative Frequency of English Speech Sounds*

	n, l	a	ɑ	e	æ	i	ɪ	o	o
nhs									
	35								
	I								
ns		vans 17		ens 106		sins 52			
	589	trans 51		tens 23					
	17			dens 42					
				fens 26					
				sens 35					
				fens 12					
				mens 12					
				hens 12					
ls				els 25					
	25								
	I								
rs									hers y
	173								
	6								
s		as 21		es 94	bēs 11	is 181	pts 74	pēs 194	les 34
	3,897	pas 65		spes 13	kēs 71	tis 65	sts 11	prēs 20	krēs 20
	64	mas 30		tes 13	fēs 42	dis 261	lts 17	hēs 16	
		klas 22		des 21	plēs 81	vis 55	krts 28		
				ves 32	rēs 11	dis 572			
				ses 69		sis 70			
				zes 11		çis 17			
				jēs 15		mis 68			
				mēs 20		lis 18			
				nēs 264		his 26			
				les 166					
				res 27					
				pres 53					
				dres 28					
				gres 16					
				kwes 45					
				yes 57					

u	ø	o	u	ū	á	é	ai	ü
munhs 35								
wuna 59	øns 41 tøns 36 støns 21 nøns 22						nans 22	
vurs* 11 wurs* 11		kors 46 fors 59 zors 15						
us 282 tus 11 dus 48 kus 27 fus 17 sus 19 fus 27 jus 37 mus 36	pøs 61	klos 19		yūs 48	fás 15 vás 17 prás 43	vēs 19 çēs 11	hais 70	düs 39

	n, l	a	ɑ	e	ē	i	ɪ	ə	ē
ndz $\frac{118}{6}$		standz 12 handz 32		frendz 17				bendz 18	
rdz $\frac{11}{1}$									
ldz $\frac{11}{1}$							fildz 11		
rdz $\frac{34}{2}$			yardz 16						
dz $\frac{76}{4}$							ndz 21		
gz $\frac{104}{1}$				egz 104					
lvz $\frac{55}{1}$				selvz 55					
vz $\frac{47}{3}$						tivz 23 givz 13	livz 11		

106 *Relative Frequency of English Speech Sounds*

	n, l	a	ɑ	e	ɛ	i	ɪ	ə	ɚ
rnz	$\frac{17}{1}$								
mz	$\frac{118}{4}$				nɛnz 14		smz 30		
nz	$\frac{548}{12}$	planz 19			plɛnz 19 trɛnz 13		mɪnz 46		
ɪz	$\frac{135}{2}$					ɪɪz 53 hɪɪz 82			
rɪz	$\frac{18}{1}$								
lɪz	$\frac{106}{4}$			ɛlɪz 27 sɛlɪz 15					
rɪz	$\frac{932}{16}$	farz* 18 ɔfarz* 11	kurz 18				ɪrɪz 11 yɪrɪz 93		

u	ø	o	u	ü	i	é	ai	ü
turmz* 17								
kumz 32					támz 42			
tunz 16 gunz 23	senz 104 senz 14 senz 212 çenz 17 yenz 38				lánz 27			
gurlz* 18								
	elz 36				mälz 28			
	erz 379 perz 13 berz 53 terz 105 derz 33 serz 27 jerz 36		çurz 26 yurz 19	yürz 56			airz 34	

u	e	o	u	ü	ä	é	ai	ü
tuç 20 suç 132 muç 107								
juj 23								
form* 18								
um 25 kum 270 sum 277 num 58	təm 14 dəm 24	hom 69		rüm 24 hüm 28	ám 30 tám 22			sim 20

114 *Relative Frequency of English Speech Sounds*

	n, l	a	ɑ	e	ɛ	i	ɪ	ē	ē
r									
	$\frac{32}{1}$								
l	See page 116 $\frac{4,671}{74}$	al 23 gal 15 val 53 fal 120		el 63 pel 12 tel 100 del 11 fel 35 vel 27 eel 43 fel 15 wel 122 dwel 12	tél 21 fél 32 vél 21 sél 21 mél 13 rél 39	il 25 bil 82 til 108 kil 15 skil 11 fil 14 vil 17 sil 28 çil 39 mil 117 wil 470	stíl 51 díl 27 fíl 48	el 35 pél 27 tél 11 dél 30 kél 20 fél 61 vél 15 nél 32 kwél 17	el 679 kél 47 fél 28 smél 54
r	$\frac{12,189}{108}$	ar* 23 par 30 par* 19 bar 18 kar 88 nar* 335 nar 25 skwar* 18 war* 22 hwar* 125	ar 642 par 107 bar 23 kar 43 gar 19 far 65 mar 31 lar 18 har 15	er 18 per 23 ber 36 ter 30 ker 46 fer 34 ver 146 ser 11 ger 28 her 25	ér 20 dér 323 ⑧	spir 26	ptr 14 dtr 58 ftr 21 mtr 30 ntr 61 kltr 34 rtr 13 ytr 60 htr 147	ter 15 ker 26 fer 80 her 28 jer 13 mer 33 wër 221 kwër 24	er 602 për 34 kër 34 fër 1136 mër 11 nër 46 wër 221 kwër 24

	u	ø	o	u	ü	ä	é	ai	ü
su	120	ø 3167	o 707	u 127	tü 3152	ä 1250	be 15	pa 77	bü 49
		pø 72	po 153	tu 305	dü 239	bä 644	je 14	ha 40	tü 28
		tø 63	to 179	tu 23	jü 16	tä 24	le 25	na 210	dü 51
		de 24	do 27	cu 47	blü 11	dä 22	jé 22	ha 152	kü 34
		kø 36	ko 42	flu 16	klü 14	fä 45	stre 15		gü 17
		fø 24	go 179	stru 11	trü 30	vä 28			fü 100
		vø 12	fö 11	wu 57	hrü 96	sä 48			vü 34
		sø 16	vo 11	yu 268	yü 862	mä 341			sü 34
		mø 129	fö 60		hü 252	lä 39			mü 55
		mø 27	so 446			plä 39			nü 182
		lø 15	fö 48			flä 15			lü 31
		rø 75	mo 116			rä 30			hü 35
		trø 14	no 478			prä 30			
			lo 60			trä 45			
			glo 12			krä 14			
			ro 44			hwä 51			
			pro 226			hä 100			
			bro 17						
			tro 30						
			gro 15						
			hro 13						
			ho 11						
	<u>120</u>	<u>3,674</u>	<u>2,885</u>	<u>854</u>	<u>4,672</u>	<u>2,774</u>	<u>91</u>	<u>479</u>	<u>650</u>
	I	13	22	8	9	17	5	4	12
	<u>7,773</u>	<u>12,350</u>	<u>5,418</u>	<u>2,393</u>	<u>5,676</u>	<u>5,258</u>	<u>221</u>	<u>2,048</u>	<u>973</u>
	119	90	77	31	36	84	10	28	25

TABLE 14. SUMMARY OF TABLE 13

Final sound	Occurrences	Items	Final sound	Occurrences	Items
mp	12	1	sk	53	2
lp	29	1	ŋk	150	4
p	1,072	23	lk	20	1
b	532	12	rk	142	2
mpt	18	1	k	2,193	50
pt	98	4	g	250	12
skt	36	1	lf	166	1
kt	471	14	f	1,126	22
ft	48	1	lv	13	1
kst	44	1	rv	34	2
nst	93	2	v	6,268	31
rst	158	2	nh	28	1
st	1,356	32	ŋh	20	1
ʃt	19	1	lh	23	2
çt	13	1	rh	76	4
nt	1,456	25	h	212	7
lt	79	3	ɸ	1,274	9
rt	377	11	ps	79	3
t	8,841	94	kts	59	4
lvd	15	1	sts	43	3
vd	102	6	nts	181	6
zd	145	5	rts	58	3
njd	15	1	ts	350	5
rjd	11	1	rks	30	2
jd	11	1	ks	480	8
rmd	20	1	nhs	35	1
md	26	1	ns	589	17
rnd	57	2	ls	25	1
nd	4,230	28	rs	173	6
rld	106	1	s	3,897	64
ld	409	13			
rd	593	20			
d	4,219	66			

Final sound	Occurrences	Items	Final sound	Occurrences	Items
ndz	118	6	n	572	6
rldz	11	1	l	953	7
ldz	11	1	n, l	1,525	13
rdz-	34	2			
dz	76	4	a	686	1
gz	104	1	ɑ	37	2
lvz	55	1	e	141	3
vz	47	3	ē	3,030	21
rmz	17	1	i	9,657	25
mz	118	4	ī	3,921	21
nz	548	12	ē	343	3
ŋz	135	2	ē	224	5
rlz	18	1	u	120	1
lz	106	4	ə	3,674	13
rz	932	16	o	2,885	22
z	6,395	61	u	854	8
ʃ	606	17	ū	4,672	9
ʒ	73	3	Vowel	30,244	134
nç	12	1			
rç	14	1	đ	2,774	17
ç	936	13	ē	91	5
nj	92	3	ai	479	4
rj	108	2	ū	650	12
j	405	15	Diphthong	3,994	38
zm	30	1			
rm	124	5			
m	3,388	41			
rn	291	8	fi	7,310	1
n	13,102	102	Consonant	90,513	1,184
ŋ	2,957	17	n, l	1,525	13
rl	32	1	Vowel	30,244	134
l	4,671	74	Diphthong	3,994	38
r	12,189	108	Total	133,586	1,370
Consonant	90,513	1,184			

Part 4—Sounds

Part 4

Sounds

Relativ frequency of the simple sounds of English

Any statement of the relativ frequency of the simple sounds of English must, to hav definit, general, or comparativ value, make unmistakably clear the fonetic basis on which it rests, with respect to

- 1) The number, and nature, of the sounds distinguisht,
- 2) The authority for pronunciation adopted, and
- 3) The particular treatment accorded the words *the* and *a*, and the so-cald "neutral vowel," ə.

The Revised Scientific Alfabet used as Key 1 of the Standard Dictionary, is a medium precision, 48 sound, fonetic alfabet for English, based on the American Filological Association alfabet of 1876. The basis and detaild structure of this alfabet ar explaind with admirable simplicity and clearness in the *Spelling and Pronunciation* preface of the unabridged Standard Dictionary (editions since 1911) which should be consulted by all interested in this aspect of the problem.

As the Standard Dictionary was adopted, for reasons previously discust, as the authority for pronunciation for this investigation, the maximum of information was obviously to be secured by performing the primary analisis of sounds on the 48 sound basis of Key 1, making possible any desired treatment or presentation of final results simply by combining the separate unit data thus secured in various forms.

On the 48 sound basis of Key 1, the "neutral vowel" offers no problem, for the simple, definit treatment of the unstrest vowels is perhaps the most distinctiv characteristic of this alfabet. On any basis, however, the particularly common words *the* and *a* require separate consideration, for each has alternativ correct pronunciations, concurrently used by careful speakers. Thus, (Standard Dictionary): *the*, ðɪ (named or emfatic);

fi (unemphatic before a vowel); fə (unemphatic before a consonant). a, ə (unaccented, ə).

To consider 10% of the occurrences of each of these 2 words as named or emphatic or accented is a maximum assumption so far as I can deduce from observation and the estimates of others. As the proportion of initial vowels to initial consonants is roughly 1 to 2, the unemphatic 90% of occurrences of *the* may properly be distributed as 30% fi, and 60% fə. This basis is adopted in Table 15 following, which shows, in fonetic order, the total frequency of occurrence of each of the 48 sounds distinguished by the Standard Dictionary, and the number of different items or places in which each occurred, in the 100,000 words counted and analyzed.

In Table 15 only, the Revised Scientific Alphabet is used instead of the S S B key alphabet in order to represent the 7 additional vowel and diphthong sounds * distinguished by the former. See Appendix A for statement of the slight differences between these alphabets. The 7 additional sounds interpolate readily and obviously in the fonetic order adopted.

As the general purpose of this investigation was not only to introduce into the study of phonetics an important quantitative element heretofore lacking, but also to provide data of immediate practical value in the teaching of English, and in fonetic writing of English, more particularly fonetic shorthand writing, it is obvious that these data should be organized on a fonetic basis of maximum simplicity, minimum precision, sufficient for these purposes. The large experience of Pitmanic shorthand has demonstrated, I think conclusively, that 40 sounds (considering ç and j as simple sounds, and counting the 4 vowel diphthongs i e ai u) represent the extreme minimum with which strictly fonetic writing of English may be achieved. By *strictly* I refer to no particular degree of precision but to strict adherence to the principle: one sign for each sound, one sound for each sign.

The S S B key alphabet here adopted differs from the minimum 40 sound basis of Pitmanic shorthand practis

* See page 126 following.

TABLE 15 RELATIV FREQUENCY OF THE SIMPLE SOUNDS OF ENGLISH ON THE 48 SOUND BASIS OF THE REVISED SCIENTIFIC ALFABET. ARRANGED IN FONETIC ORDER

Sound	%	Occur- rences	Items	Sound	%	Occur- rences	Items
p	2.04	7,620	1,960	a	3.50	13,060	1,445
b	1.81	6,750	1,175	ā	.23	881	141
t	7.13	26,550	4,495	æ	.22	820	120
d	4.31	16,050	3,100	ɑ	.02	95	50
k	2.71	10,100	2,700	ū	.47	1,740	306
g	.74	2,760	635	e	3.44	12,800	3,170
f	1.84	6,860	1,135	ē	1.84	6,863	1,317
v	2.28	8,490	910	ī	4.42	16,493	4,151
th	.37	1,380	210	i	4.11	15,301	1,826
th	3.43	12,780	116	ı	2.12	7,921	876
s	4.55	16,970	4,155	ø	2.81	10,450	1,050
z	2.97	11,070	2,050	ā	1.26	4,701	491
sh	.82	3,052	846	u	1.70	6,360	1,115
ʒ	.05	170	51	ū	.63	2,350	440
ch	.52	1,930	350	ø	4.63	17,264	2,937
j	.44	1,630	495	o	.33	1,230	415
m	2.78	10,360	1,840	ō	1.30	4,859	763
n	7.24	26,980	4,375	u	.69	2,570	450
ŋ	.96	3,590	1,035	ū	1.60	5,961	311
l	3.74	13,930	3,290	<i>Vowel</i>	<i>35.32</i>	<i>131,719</i>	<i>21,374</i>
r	6.88	25,620	5,420	ai	1.59	5,923	857
w	2.08	7,760	555	ei	.09	345	105
y	.60	2,230	245	au	.59	2,215	235
h	1.81	6,755	485	iu	.02	60	35
<i>Consonant</i>	<i>62.10</i>	<i>231,387</i>	<i>41,628</i>	iū	.29	1,080	290
<i>Vowel</i>	<i>35.32</i>	<i>131,719</i>	<i>21,374</i>	<i>Diphthong</i>	<i>2.58</i>	<i>9,623</i>	<i>1,522</i>
<i>Diphthong</i>	<i>2.58</i>	<i>9,623</i>	<i>1,522</i>				
Total	100.00	372,729	64,524				

the 7,310 assumed; ŋt 10%; ŋl 30%; ŋø 60%
 a 2,120 " e 10%; ø 90%

only in its recognition of the "neutral vowel" and its treatment of the word *the*. It differs from the 48 sound basis of the Revised Scientific Alphabet only in its treatment of the word *the* and in ignoring the 7 finest distinctions of the latter. These are:

Between the <i>ü</i> of <i>feud</i>	and of <i>futility</i>
" <i>a</i> <i>art</i>	" <i>artistic</i>

The vowel of *fast*, distinguished as a hybrid, neither the *a* of *fat* nor the *a* of *far*.

Between the <i>o</i> of <i>note</i>	and of <i>obey</i>
" <i>i</i> <i>bit</i>	" <i>habit</i>
" <i>a</i> <i>bat</i>	" <i>bare</i>
" <i>u</i> <i>but</i>	" <i>burr</i>

The first 5 of these combinations are sufficiently obvious. Of the 6th I may say that my personal judgment, confirmed by those advisers in whom I have most confidence, is that the vowel (Revised Scientific Alphabet *ā*) of *bare* resembles more closely the *e* of *bet* than the *a* of *bat*, and might therefore be more appropriately combined with the former. Of the 7th my personal judgment, confirmed by the International Phonetic Association alphabet, as nearly final authority as the next field of phonetics affords, is that the vowel (Revised Scientific Alphabet *ɔ*) of *burr* differs slightly in quality as well as quantity from the *u* of *but*, but is identical except for *stress* with the "neutral vowel" *ə* of *member*, and might therefore be more appropriately combined with the latter. On both these points however it has seemed more useful to adhere strictly to the basis of classification implied by the Revised Scientific Alphabet, as used in the Standard Dictionary, making the combinations tabulated above. Those interested in separate consideration of these 2 sound classifications will find syllables containing these 2 sounds (the *a* of *bare* and the *u* of *burr*) distinguished by a * throughout the syllable tables, while the frequency of the sounds alone appears, of course, in Table 15.

One reason for separate treatment of the commonest word, *the*, is suggested by the discussion of its alternative correct pronunciations (page 123 preceding.) Another is that shorthand practices almost invariably, and properly,

treats the word *the* with a separate sign; so that for purposes of shorthand construction, data not subject to the markt influence of this commonest word are more accurately significant. A third reason is the markt economy of effort of a single sign, as compared with 2 fonetic or 3 *a b c* letters, for the most frequent word of English, which occurs more often than do over half of the simple sounds, in a fonetic print notation. Both on theoretic and practical grounds a separate logotipe for the word *the* seems a happy solution.

This fonetic basis of the S S B key alfabet, which involvs the minimum of assumption (with respect to *the*, *a*, and *ə*) will be designated for explicit distinction the 41 + 1 sound basis (the Pitmanic 40 sounds plus *ə*, and plus *fi*).

Table 16 following givs, in fonetic order, the relativ frequency of the separate simple sounds of English speech, showing the per cent which each is of the total, the total number of its occurrences in 100,000 words, and the number of different places in which each occurrd; on the 41 + 1 sound basis above described.

In Table 17 following, the left hand columns show the relativ frequency of English speech sounds, on the 41 + 1 sound basis, arranged in order of frequency of their total occurrence. The column heded Occurrences ÷ Items givs an incidental mesure (inverse) of what might be cald the versatility of each sound — whether it occurs chiefly in a few words of great importance, as with *fi*, or in many words of relativly infrequent occurrence, as with *ŋ* or *j*. The right hand columns show in detail the frequency of occurrence of each sound initially, medially, finally, or alone in syllables; and initially, medially, finally, or alone in words. These latter analitic data ar of indispensable importance to any study of language structure as a scientific basis for shorthand construction, and will be significant in much more general linguistic study.

The arrangement in order of frequency shows that, of the 42 fonetic elements distinguisht:

The first	4	sounds	make	up	over	25 %	of	the	total
"	9	"	"	"	50 %	"	"	"	"
"	19	"	"	"	75 %	"	"	"	"

TABLE 16. RELATIV FREQUENCY OF THE SIMPLE SOUNDS OF ENGLISH ON THE 41 + I SOUND BASIS OF THE S S B KEY ALFABET. ARRANGED IN FONETIC ORDER

Sound	%	Occur- rences	Items	Sound	%	Occur- rences	Items
p	2.08	7,620	1,960	a	4.04	14,761	1,706
b	1.84	6,750	1,175	ɑ	.50	1,835	356
t	7.27	26,550	4,495	e	3.50	12,800	3,170
d	4.39	16,050	3,100	ɛ	1.88	6,863	1,317
k	2.77	10,100	2,700	i	8.12	29,601	5,976
g	.76	2,760	635	ɪ	1.96	7,190	875
f	1.88	6,860	1,135	ə	2.86	10,450	1,050
v	2.32	8,490	910	ɚ	1.29	4,701	491
h	.38	1,380	210	u	2.38	8,710	1,555
ŋ	1.50	5,470	115	ə	3.52	12,878	2,936
s	4.64	16,970	4,155	o	1.66	6,089	1,178
z	3.03	11,070	2,050	u	.70	2,570	450
ʃ	.84	3,052	846	ɹ	1.63	5,961	311
ʒ	.05	170	51	Vowel	34.04	124,409	21,371
ç	.53	1,930	350	ä	1.61	5,923	857
j	.45	1,630	495	ɛ̃	.09	345	105
m	2.83	10,360	1,840	ɑ̃	.61	2,215	235
n	7.38	26,980	4,375	ü	.31	1,140	325
ŋ	.98	3,590	1,035	Diphthong	2.62	9,623	1,522
l	3.82	13,930	3,290				
r	7.02	25,620	5,420				
w	2.12	7,760	555				
y	.61	2,230	245				
h	1.85	6,755	485				
Consonant	61.34	224,077	41,627				
Vowel	34.04	124,409	21,371				
Diphthong	2.62	9,623	1,522				
ñi	2.00	7,310	1				
Total	100.00	365,419	64,521				

a 2,120 assumed: ɛ 10% ɚ 90%

To facilitate comparative study of the more fonetic of existing shorthand systems, and other minimum precision fonetic notation schemes, the data on relative frequency of sounds are reduced to the 40 sound basis and presented, in order of frequency, in Table 18 following. This reduction, with its non-recognition of the "neutral vowel" involves treating *the* and *a* as occurring only with their formal stress pronunciation, and distributing the occurrences of *ə* in accord with the most usual treatment of such occurrences in Pitmanic shorthand, as indicated at the bottom of the table.

Fonetists are to-day agreed as to the definite and constant character of the *neutral vowel* or *low unstress vowel*, *ə*, which furnishes one of the most perplexing problems of the spelling reformer or shorthand inventor of 2 generations ago; so that a fonetic notation primarily to be read in print which did not include a sign for this sound would be unthinkable for any purpose, however "popular" or general; and experience shows that the average layman has no difficulty in recognizing this sound clearly in a fonetic print. But in the present fonetic innocence of the general public, created and maintained by the non-fonetic character of the present heterogeneous conventional spelling, there is some question whether the average layman could use this sound intelligently in writing, in shorthand or otherwise. Table 17 may therefore be regarded as presenting the optimum, and probably feasible, basis of popular fonetic understanding; Table 18 the minimum basis, already proved practicable.

TABLE 17. RELATIVE FREQUENCY OF ENGLISH SPEECH SOUNDS, ON THE 41 + I SOUND BASIS OF THE S S B KEY ALFABET. ARRANGED IN ORDER OF FREQUENCY

Sound	%	Occur- rences	Items	Occurrences		Syllabic analysis			Word analysis				Sound
				Items	Items	Initial	Medial	Final	Syllabic	Initial	Medial	Final	
i	8.12	29,601	5,976	4.96	9,943	10,010	6,431	3,217	6,730	18,750	4,121	4,121	i
n	7.38	26,980	4,375	6.17	3,977	8,460	14,200	343	2,590	15,650	8,740	8,740	n
t	7.27	26,550	4,495	5.91	9,620	2,410	14,520		5,150	9,630	11,770	11,770	t
r	7.02	25,620	5,420	4.73	3,720	9,370	12,530		2,255	14,995	8,370	8,370	r
s	4.64	16,970	4,155	4.08	7,850	2,120	7,000		5,575	6,765	4,630	4,630	s
d	4.39	16,050	3,100	5.13	4,290	520	11,240		2,760	3,480	9,810	9,810	d
a	4.04	14,761	1,706	8.65	6,109	7,945	21	686	6,690	8,071			a
l	3.82	13,930	3,290	4.23	4,606	3,190	5,870	264	2,090	7,575	4,265	4,265	l
ə	3.52	12,878	2,936	4.31	4,131	5,030	550	3,167	840	10,040	90	90	ə
e	3.50	12,800	3,170	4.03	3,895	8,740	55	110	1,700	11,100			e
z	3.03	11,070	2,050	5.40	548	300	10,220	2	15	1,530	9,525	9,525	z
ø	2.86	10,450	1,050	9.97	5,265	4,850	180	155	5,120	5,330			ø
m	2.83	10,360	1,840	5.63	5,830	570	3,960		4,020	4,015	2,325	2,325	m
k	2.77	10,100	2,700	3.74	5,400	1,730	2,970		3,990	4,680	1,430	1,430	k
u	2.38	8,710	1,555	5.60	1,550	7,040	120		1,230	7,480			u
v	2.32	8,490	910	9.33	1,640	350	6,500		540	2,635	5,315	5,315	v
w	2.12	7,760	555	13.98	5,810	1,950			5,480	2,280			w
p	2.08	7,620	1,960	3.89	5,325	885	1,410		3,425	3,640	555	555	p
fi	2.00	7,310	1	—	—	—	—	7,310	—	—	—	—	fi
i	1.96	7,190	875	8.22	204	2,990	3,810	186	350	4,030	2,810	2,810	i

e	1.88	6,863	1,317	5.22	199	3,600	2,600	464	215	5,155	1,280	213
f	1.88	6,860	1,135	6.04	5,300	130	1,430		4,055	2,015	790	
h	1.85	6,755	485	13.93	6,755		620		6,515	240	50	
b	1.84	6,750	1,175	5.74	6,090	40		707	4,800	1,900	1,200	59
o	1.66	6,089	1,178	5.17	422	2,700	2,260		720	4,110	4,590	
u	1.63	5,961	311	19.15	1	1,215	4,745		1	1,370	4,590	
a	1.61	5,923	857	6.92	194	2,890	1,580	1,259	210	3,390	1,150	1,173
i	1.50	5,470	115	47.60	4,040	15	1,415	61	4,010	720	740	
e	1.29	4,701	491	9.59	1,400	3,040	200		1,450	3,160	90	1
u	.98	3,590	1,035	3.47		470	3,120	2	855	2,070	125	2
s	.84	3,052	846	3.61	2,250	80	720		1,480	1,165	115	
g	.76	2,760	635	4.34	2,230	140	390	127		2,360	210	
y	.70	2,570	450	5.72	83	1,615	745			550	375	
u	.61	2,230	245	9.10	2,230		550		1,680	1,180	375	
ai	.61	2,215	235	9.42	745	920			660	640	905	
u	.53	1,930	350	5.52	770	60	1,100	11	385	1,085	13	10
a	.50	1,835	356	5.16	732	1,031	61		727	850	415	
j	.45	1,630	495	3.29	830	75	725		365	345	340	
h	.38	1,380	210	6.57	850	50	480		695	880	260	
u	.31	1,140	325	3.51		470	670		20	285	40	
e	.09	345	105	3.29	20	215	110			165	5	
z	.05	170	51	3.33	68	2	100					
Totals	100.00	365,410	64,521	Total occurrences Total items	124,922	97,218	125,208	18,071	80,303	175,976	80,374	10,676

TABLE 18 RELATIVE FREQUENCY OF ENGLISH SPEECH SOUNDS
ON THE 40 SOUND BASIS OF STANDARD PITMANIC SHORTHAND,
ARRANGED IN ORDER OF FREQUENCY

Sound	%	Occur- rences	Items	Sound	%	Occur- rences	Items
i	7.94	29,601	5,976	f	1.84	6,860	1,135
n	7.24	26,980	4,375	h	1.81	6,755	1,185
t	7.13	26,550	4,495	b	1.81	6,750	1,175
r	6.88	25,620	5,420	o	1.63	6,089	1,178
u	5.02	18,750	4,320	ŋ	1.60	5,961	311
s	4.55	16,970	4,155	ä	1.59	5,923	857
d	4.31	16,050	3,100	ə	1.26	4,701	491
a	4.17	15,601	1,841	ŋ	.96	3,590	1,035
i	3.89	14,500	876	ʃ	.82	3,052	846
l	3.74	13,930	3,290	g	.74	2,760	635
e	3.44	12,800	3,170	u	.69	2,570	450
ŋ	3.43	12,780	116	y	.60	2,230	245
z	2.97	11,070	2,050	ai	.59	2,215	235
e	2.81	10,450	1,050	c	.52	1,930	350
m	2.78	10,360	1,840	a	.52	1,925	391
k	2.71	10,100	2,700	j	.44	1,630	495
ē	2.35	8,771	1,317	h	.37	1,380	210
v	2.28	8,490	910	ū	.31	1,140	325
w	2.08	7,760	555	ē	.09	345	105
p	2.04	7,620	1,960	z	.05	170	51
	81.76	304,753	53,516		18.24	67,976	11,005
					81.76	304,753	53,516
				Total	100.00	372,729	64,521

the 7,310 assumed: ŋ
 a 2,120 " e
 ə 10,970 " { a 840 (initial in words)
 u 10,040 (medial ")
 a 90 (final ")

General Summary

The outstanding feature of this study is the degree to which a comparatively small part of the commoner words, syllables, or sounds, of English form, by their frequent repetitions, a large part of our ordinary speech. In general summary, for the 100,000 words investigated:

9 words ar found to form over	} 25%	{	of the total words
12 syllables			" syllables
4 sounds			" sounds
69 words	} 50%	{	" words
70 syllables			" syllables
9 sounds			" sounds
732 words	} 75%	{	" words
339 syllables			" syllables
19 sounds			" sounds
1027 words occurring over 10 times	form	78.6%	of the words
1370 syllables	" form	93.4%	" syllables
41 + 1 sounds	form	100%	" sounds

Intensiv study of these commoner words and syllables, and the simple sounds, wil thus suffice to giv an organized and fairly adequate quantitativ conception of the fonetic structure of modern English.

Appendix A*

A Simple Phonetic Key Alphabet for General Use

There is urgent need for a minimum precision fonetic key alphabet of maximum simplicity, for general popular use as distinct from the purposes of the professional fonologist. Such an alphabet will be of constant and general usefulness—in teaching reading or the pronunciation of English to children or adults; in the teaching of shorthand, which writes by sound, not by spelling; and for all purposes involving accurate expression of English pronunciation in print or longhand, including the literature of spelling reform. The various instruments thus far available for such purposes are all, in various degrees, unsatisfactory. These are, chiefly:

The "Webster" notation and similar complex diacritic schemes, obscure, fonetically misleading, and altogether objectionable; long since repudiated by all filologists or fonetists.

The International Phonetic Association alphabet, designed to cover all languages with a maximum of scientific precision, using a basic alphabet of 65 different letters with numerous modifiers which serve to distinguish several hundred different sounds; a valuable tool of the professional fonetician, but for general popular use for English too complex and over-refined, and *tipografically strange*.

The Revised Scientific Alphabet, often referred to as the N E A (National Education Association) alphabet, used as Key I of the New Standard Dictionary and its abridgments; based on the 1877 alphabet of the American Filological Association. This is a medium precision alphabet for English, distinguishing 48 sounds; incomparably the best for its purpose ever devised, but still too complex for the simplest general popular use.

The fonetic key alphabet here presented, used for fonetic key purposes in all publications of the Simplified Spelling Board, is strictly in harmony throughout with the Revised Scientific Alphabet, on which it is based.

(10) * A circular of the Simplified Spelling Board.

Fonetic Key Alphabet

24 CONSONANTS				13 VOWELS			
Print	Script	Name	As in	Print	Script	Name	As in
p	<i>p</i>	<i>pi</i>	pin, cup	a	<i>a</i>	<i>at</i>	am, pat, (pair)
b	<i>b</i>	<i>bi</i>	bin, cub	ɑ	<i>ɑ</i>	<i>ɑ</i>	alms, part, ma
t	<i>t</i>	<i>ti</i>	ten, bet	e	<i>e</i>	<i>et</i>	edge, let
d	<i>d</i>	<i>di</i>	den, bed	ē	<i>ē</i>	<i>ē</i>	age, late, may
k	<i>k</i>	<i>ki</i>	come, back	i	<i>i</i>	<i>it</i>	is, sit, army
g	<i>g</i>	<i>gi</i>	gum, bag	ī	<i>ī</i>	<i>ī</i>	ease, seat, me
f	<i>f</i>	<i>ef</i>	fan, safe	o	<i>o</i>	<i>ot</i>	odd, not
v	<i>v</i>	<i>ev</i>	van, save	ō	<i>ō</i>	<i>ō</i>	awed, naught
h	<i>h</i>	<i>eh</i>	thigh, bath	u	<i>u</i>	<i>ut</i>	up, ton, (turn)
θ	<i>θ</i>	<i>et</i>	thy, bathe	ə	<i>ə</i>	<i>ər</i>	about, utter, na- tion, china
s	<i>s</i>	<i>es</i>	seal, race	o	<i>o</i>	<i>o</i>	open, tone, show
z	<i>z</i>	<i>ez</i>	zeal, raise	u	<i>u</i>	<i>ut</i>	full, could
ʃ	<i>f</i>	<i>ef</i>	assure, rush	ū	<i>ū</i>	<i>ū</i>	fool, shoe
ʒ	<i>z</i>	<i>ez</i>	azure, rouge				
ʒ	<i>ʒ</i>	<i>ez</i>	choke, rich				
j	<i>j</i>	<i>ej</i>	joke, ridge				
m	<i>m</i>	<i>em</i>	met, him				
n	<i>n</i>	<i>en</i>	net, thin				
ŋ	<i>ŋ</i>	<i>en</i>	ink, thing				
l	<i>l</i>	<i>le</i>	laid, deal				
r	<i>r</i>	<i>re</i>	raid, dear				
w	<i>w</i>	<i>we</i>	wet, quit				
y	<i>y</i>	<i>ye</i>	yet, you				
h	<i>h</i>	<i>he</i>	head, who				

4 DIPHTHONGS			
Print	Script	Name	As in
i	<i>i</i>	<i>i</i>	aisle, pint, by
ɔ	<i>ɔ</i>	<i>ɔ</i>	oil, point, boy
ɑ	<i>ɑ</i>	<i>ɑ</i>	out, power, now
ū	<i>ū</i>	<i>ū</i>	pure, few

SUPPLEMENTARY SIGNS

fi *fi* =

A wordsign or logotype for the commonest word of English, *the*.

* * *capsign*

Fonetic print capitals are heavy or bold-face letters, otherwise similar to the small letters. To capitalize a fonetic longhand word, write the capsign before it.

For most teaching or manuscript purposes the *disjoined* long-hand letters below, similar in form to the print letters, will be preferable to the script forms, which necessarily differ somewhat from the print, just as common script differs from common print.

p b t d k g f v h ť s z ſ ʒ ʒ j m n ŋ l r w y h
 a a e ē i î ø ø v ə o u ū ä ø' a u ð ð *

liŋkən'z getizburg spɪç

forskor and sevn yirz əgo ar faðarz brət forð ən nis kontinent ə nū nēsən, konstvd in libərti, and dedi-kēted tū ði prəpozisən ðat əl men ar kriēted ikwəl.

nai wi ar engejd in ə grēt sivil wər, testiŋ hwēðar ðat nēsən, ør eni nēsən so konstvd and so dedikēted, kan ləŋ endür. wi ar met ən ə grēt batl-fild øv ðat wər. wi hav kum tū dedikēt ə por-sən øv ðat fild az ə fānəl restiŋ-plēs fər ðoz hū hīr gēv ðēr lāvz ðat ðat nēsən māt liv. it iz øltəgeðar fiŋiŋ and prəpər ðat wi sud dū ðis,

but in ə larjər sens, wi kanət dedikēt — wi kanət konsikrēt — wi kanət halo — ðis grand. ði brēv men, liviŋ and ded, hū strugld hīr, hav kən-sikrēted it far əbuv ar pūr pær tū ad ør ditrakt. ði wurd wil litl not nər ləŋ rimembər hwət wi sē hīr, but it kan nevər fərget hwət ðē did hīr. it iz fər us, ði liviŋ, raðər, tū bi dedikēted hīr tū ði unfiništ wurk hwiç ðē hū fət hīr hav ðus far so nobli advanst. it iz raðər fər us tū bi hīr dedikēted tū ði grēt task rimēniŋ bifor us — ðat frəm ðiz ønərd ded wi tēk inkrist divoʎən tū ðat kəz fər hwiç ðē gēv ði last ful mezur øv divoʎən; ðat wi hīr hāli rizəlv ðat ðiz ded šal nət hav dād in vən; ðat ðis nēsən, undər gød, šal hav ə nū burh øv fridəm; and ðat guvərnmənt øv ði pipl, bā ði pipl, fər ði pipl, šal nət peris frəm ði urh.

The linear order and fonetic names of the present alfabet ar based on establisht shorthand practis, for which they ar both logical and convenient.

Brief study wil enable any one to read the selection on the preceding page. An hour's study wil giv any one at all familiar with fonetics a thoro working knowledge of the key, which meets fully the 2 essentials of a strictly fonetic notation: one and only one sound for each sign, and one and only one sign for each sound.

The only differences between this alfabet and the Revised Scientific Alfabet as used in the Standard Dictionary series ar these: all easily masterd in 10 minutes by any one familiar with the latter—

SSB key	a a i u o ü	h f s ç	ä é ai ü	ñ	ê i ë ù
Revised	a a i u o iu	fh th sh çh	ai ei au iu	thl	ê i é ù
Scientific	ä ä i ö ü			thi	
Alfabet	a			the	
	1	2	3	4	5

1 Reduction to a minimum precision 41 sound basis from the medium precision 48 sound basis, by ignoring the 7 finest distinctions of the latter—at best negligible, at worst confusing, for practical popular use.

2 Simple single letters in place of the 4 consonant digraf ligatures temporarily adopted by the N E A committee as a concession to visual prejudice.

3 Single letters, each an obvious blend of the 2 fonetic elements, for the 4 vowel difthongs, in place of writing the difthong by its 2 component letters—a gain in clearness and simplicity in harmony with shorthand practis.

4 A logotipe for the commonest word of English, *the*, which has 3 different pronunciations concurrently used by careful speakers; combining logical simplicity with efficiency.

5 Slightly curving the macron over the markt long vowels as a constant reminder not to use the misleading Webster "name-sounds" for these letters.

General use of this key alfabet for all popular fonetic purposes wil conduce to simplicity and clearness, and go far toward clarifying the now sadly deficient popular understanding of the elementary essential fonetic facts of English.

SIMPLIFIED SPELLING BOARD
4 Emerson Hall, Harvard University
Cambridge, Mass.

December, 1922

Appendix B

Consonant compounds of English

Altho these tables giv qualitativ rather than quantitativ information as to the fonetic structure of English, they ar particularly suggestiv in connection with the quantitativ data of this investigation.

Tables B1, B3, B5 present respectively those preceding, sillabic, and following consonant compounds, and consonants, which I hav noted in the course of this study, or at other times, with key words for each. Tho I hav excluded from Table B1 a dozen or more distinctly foren compounds, occurring only in proper names or tecnicl terms of foren origin, these tables ar more complete than any that I hav seen, and certainly contain all compounds of anything like common occurrence in English. Entries enclosed in parentheses are compounds which do not occur more than 10 times in the material of this study. About half (in each table) of those so markt do occur from 1 to 10 times in this material.

Table B1 — and also B3, sillabic compounds — is arranged in fonetic order, like Table 12. Table B5 is arranged in reverse fonetic order, like Table 14.

Tables B2, B4, B6 present the same preceding, sillabic, and following consonant compounds and consonants, each in a classified arrangement which emfazes the extent to which the whole group may be regarded as the product of a very few combining consonants acting as modifiers of the rest of the consonant alfabet. This striking and important fact may be summarized as follows:

Consonant compounds and consonants

<i>Preceding</i>	<i>Sillabic</i>	<i>Following</i>
$\begin{matrix} s \\ o \end{matrix} \left. \begin{matrix} \\ \\ \end{matrix} \right\} \begin{matrix} l- \\ r- \\ w- \\ o- \end{matrix}$	$\left. \begin{matrix} \\ \\ \\ \end{matrix} \right\} \begin{matrix} n \\ nd \\ nz \\ l \\ ld \\ lz \end{matrix}$	$\begin{matrix} -l \\ -r \\ -o \end{matrix} \left. \begin{matrix} \\ \\ \end{matrix} \right\} \begin{matrix} t \\ ts \\ d \\ dz \\ s \\ z \\ o \end{matrix}$
57/57 = 100 %	50/51 = 98 %	135/181 = 75 %

In the above summaries, and in the tables following, the hyphen represents the place of the vowel of the syllable; the apostrophe represents the place of any consonant which may occur in such a combination; and the italic *o* represents the absence of any consonant at that point. Thus, substituting the consonant *p* for the apostrophe in the above summaries, they would denote the following consonant compounds and consonants occurring in the succeeding tables:

<i>Preceding</i>	<i>Syllabic</i>	<i>Following</i>
(also)	(also)	(also)
sp- sl-	pn n	-lpt -pt -lt -rt -t
spr- sw-	pnd nd	-lps -pts -lts -rts -ts
sp- s-	pnz nz	-lp -ps -ld -rd -d
pl- l-	pl l	-rpt -p -ldz -rdz -dz
pr- r-	pld ld	-rpts -ls -rs -s
p- w-	plz lz	-rps -lz -rz -z
		-rp -l -r

The summary figures express the fact that all 57 of the preceding, 50 of the 51 syllabic, and 135 of the 181 following compounds and consonants, may be reduced to the forms symbolized above. Note particularly that the preceding group involves only 4, the syllabic group only 4, the following group only 6, and all 3 groups together only 8 different combining consonants, to produce 196/243 (excluding 46 single consonant occurrences) or over 80% of all consonant compounds here reported.

TABLE B1 57 PRECEDING CONSONANT COMPOUNDS
AND CONSONANTS. IN FONETIC ORDER,
WITH KEY WORDS

pl-	place	spl-	split	Summary	
pr-	price	spr-	spring	,	23
p-	part	sp-	speak	'l-	5
bl-	black	str-	street	'r-	9
br-	brought	st-	still	'w-	6
b-	be	(skl-	sclerosis)		
tr-	true	skr-	scrape	s'-	8
tw-	twelve	skw-	square		
t-	to	sk-	school	s'l-	2
dr-	drive	(sf-	sphere)	s'r-	3
dw-	dwel	sm-	small	s'w-	1
d-	do	(sn-	snow)	<i>Total</i>	<i>57</i>
kl-	clear	sl-	slow		
kr-	crowd	sw-	sweet		
kw-	quite	s-	so		
k-	can	z-	zone		
gl-	glad	(ʃr-	shrewd)		
gr-	great	ʃ-	she		
(gw-	guano)	ʒ-	jardiniere		
g-	good	ç-	charge		
fl-	flour	j-	just		
fr-	from	m-	my		
f-	for	n-	not		
v-	very	l-	like		
hr-	thru	r-	right		
(hw-	thwart)	w-	was		
h-	thing	y-	you		
h-	that	hw-	which		
		<u>h-</u>	he		
		57			

TABLE B2 57 PRECEDING CONSONANT COMPOUNDS AND CONSONANTS. CLAST

	'l-	'r-	'w-	s'- s''-		'l-	'r-	'w-	s'- s''-	
p-				sp-		ʃ-				
	pl-			spl-			ʃr-			
		pr-		spr-		ʒ-				
b-						ç-				
	bl-					j-				
		br-				m-			sm-	
t-				st-		n-			sn-	
		tr-		str-		l-			sl-	
			tw-			r-				
d-						w-			sw-	
		dr-				y-				
			dw-			h-				
k-				sk-				hw-		
	kl-			skl-		23	5	9	6	
		kr-		skr-						
			kw-	skw-		43				14
g-										Total 57
	gl-				Single	23				23
		gr-			Diphthong	20			8	28
			gw-		Trifthong				6	6
f-				sf-						Total 57
	fl-									
		fr-								
v-										
h-										
		hr-								
			hw-							
ʃ-										
s-										
z-										

See e-
column }

TABLE B3 51 SYLLABIC CONSONANT COMPOUNDS AND CONSONANTS. IN FONETIC ORDER, WITH KEY WORDS

				Summary	
open	pn	even	vn		
(opened	pnd)	(evened	vnd)	'n	6
(opens	pnz)	(evens	vnz)	'nd	5
people	pl	(evil	vl)	'nz	6
(peopled	pld)	(naveled	vld)	n, nt, nd, nz	4
peoples	plz	(evils	vlz)		21
cable	bl	(heathen	fn)	'l	9
(cabled	bld)	(heathens	fnz)	'ld	9
cables	blz	reason	zn	'lz	9
title	tl	(reasoned	znd)	l, ld, lz	3
(titled	tld)	reasons	znz		
(titles	tlz)	(foozle	zl)		30
garden	dn	(foozled	zld)	<i>Total</i>	<u>51</u>
(gardened	dnd)	(foozles	zlz)		
(gardens	dnz)	happen	n		
handle	dl	doesn't	nt		
(handled	dld)	happened	nd		
(handles	dlz)	happens	nz		
broken	kn	battle	l		
(betokened	knd)	battled	ld		
(tokens	knz)	battles	<u>lz</u>		
article	kl		51		
(articled	kld)				
articles	klz				
single	gl				
(singled	gld)				
(singles	glz)				
(trifle	fl)				
(trified	fld)				
(trifles	flz)				

TABLE B4 51 SILLABIC CONSONANT COMPOUNDS
AND CONSONANTS. CLAST

	'n	'nd	'nz	'l	'ld	'lz	
<i>o</i>		*nt					
<i>o</i>	n	nd	nz	l	ld	lz	
<i>p</i>	pn	pnd	pnz	pl	pld	plz	
<i>b</i>				bl	bl d	bl z	
<i>t</i>				tl	tl d	tl z	
<i>d</i>	dn	dnd	dnz	dl	dl d	dl z	
<i>k</i>	kn	knd	knz	kl	kl d	kl z	
<i>g</i>				gl	gl d	gl z	
<i>f</i>				fl	fl d	fl z	
<i>v</i>	vn	vnd	vnz	vl	vld	viz	
<i>n</i>	n̄n		n̄nz				
<i>z</i>	zn	znd	znz	zl	zld	ziz	
	7	7	7	10	10	10	Total 51
Single	1			1			2
Double	6	2	1	9	1	1	20
Triple		5	6		9	9	29
							Total 51

* Irregular

TABLE B5 182 FOLLOWING CONSONANT COMPOUNDS
AND CONSONANTS. IN REVERSE FONETIC ORDER —
RIMING DICTIONARY ORDER — WITH KEY WORDS

(grasp	-sp)	reached	-çt	milk	-lk
stamp	-mp	(burnt	-rnt)	work	-rk
help	-lp	sent	-nt	take	-k
(sharp	-rp)	built	-lt	(burg	-rg)
up	-p	part	-rt	big	-g
(bulb	-lb)	it	-t	(triumph	-mf)
(curb	-rb)	(bulbed	-lbd)	self	-lf
job	-b	(curbed	-rbd)	(scarf	-rf)
(grasped	-spt)	(rubbed	-bd)	if	-f
tempt	-mpt	(begged	-gd)	twelve	-lv
(helped	-lpt)	solved	-lvd)	serve	-rv
(warped	-rpt)	(served	-rvd)	of	-v
kept	-pt	moved	-vd	(depth	-ph)
asked	-skt	(breathed	-fd)	(eighth	-th)
(thanked	-ñkt)	(adzed	-dzd)	(width	-dh)
(milked	-lkt)	(cleansed	-nzd)	(fifth	-fh)
(worked	-rkt)	used	-zd	(sixth	-ksh)
fact	-kt	(rouged	-zd)	month	-nh
(triumphed	-mft)	changed	-njd)	strength	-ñh
(engulfed	-lft)	(bulged	-ljd)	health	-lh
(dwarfed	-rft)	charged	-rjd)	worth	-rh
left	-ft	gaged	-jd)	both	-h
(unearthed	-rñt)	(chasmed	-zmd)	with	-f
(lathed	-ñt)	(filmed	-lmd)	(grasps	-sps)
(lapsed	-pst)	formed	-rmd)	(stamps	-mps)
(ii) next	-kst)	seemed	-md)	(helps	-lps)
danced	-nst)	turned	-rnd)	(harps	-rps)
(whilst	-lst)	and	-nd)	ships	-ps)
first	-rst)	(longed	-ñd)	(tempts	-mpts)
must	-st)	world	-rld)	(excerpts	-rpts)
(welshed	-lñt)	old	-ld)	(scripts	-pts)
wished	-ñt)	hard	-rd)	(instincts	-ñkts)
(branched	-nçt)	had	-d)	facts	-kts)
(filched	-lçt)	ask	-sk)	(gifts	-fts)
(searched	-rçt)	think	-ñk)	(texts	-ksts)

(bursts	-rsts)	words	-rdz	turn	-rn
lasts	-sts	needs	-dz	in	-n
cents	-nts	(burgs	-rgz)	long	-ŋ
(belts	-lts)	eggs	-gz	girl	-rl
parts	-rts	selves	-lvz	all	-l
its	-ts	(serves	-rvz)	for	-r
(asks	-skts)	gives	-vz		<u>181</u>
(thanks	-ŋks)	(bathes	-fz)		
(milks	-lks)	(prisms	-zmz)		
works	-rks	(films	-lmz)	Summary	
books	-ks	terms	-rmz	'	21
(nymphs	-mfz)	times	-mz	't, 'd	22
(gulfs	-lfs)	(turns	-rnz)	't, 'd	36
(dwarfs	-rfs)	lines	-nz		
(cuffs	-fs)	things	-ŋz	's, 'z	18
(depths	-pfs)	girls	-rlz	's, 'z	29
(eighths	-ths)	miles	-lz		
(widths	-dhs)	years	-rz	'ts, 'dz	10
(fifths	-fhs)	is	-z	'ts, 'dz	6
(sixths	-kshs)	(welsh	-lŋ)		
months	-nhs)	(harsh	-rf)	Other ''	37
(lengths	-ŋhs)	fish	-ŋ		
(healths	-lhs)	rouge	-ʒ	-ksh, kshs	<u>2</u>
(births	-rhs)	trench	-nʒ	Total	<u>181</u>
(deaths	-hs)	(filch	-lʒ)		
since	-ns	search	-rʒ		
else	-ls	such	-ʒ		
force	-rs	change	-nj		
this	-s	(bulge	-lj)		
(bulbs	-lbz)	large	-rj		
(verbs	-rbz)	judge	-j		
(jobs	-bz)	chasm	-zm		
hands	-ndz	(film	-lm)		
worlds	-rldz	form	-rm		
fields	-ldz	from	-m		

TABLE B6 182 FOLLOWING CONSONANT COMPOUNDS AND CONSONANTS. CLAST

	Group					-t -d	-s -z	-ts -dz	-st -zd	-sts
	1	2	3							
			m n ŋ	l	r					
-p		-sp	-mp	-lp	-rp	-pt	-ps	-pts	-pst	
						-spt	-sps			
						-mpt	-mps	-mpts		
						-lpt	-lps			
						-rpt	-rps	-rpts		
-b				-lb	-rb	-bd	-bz			
						-lbd	-lbz			
						-rbd	-rbz			
							-ts		(12)	
							-dz		-dzd	
						-kt	-ks	-kts	-kst	-ksts
		-sk				-skt	-sks			
			-ŋk			-ŋkt	-ŋks	-ŋkts		
				-lk		-lkt	-lks			
					-rk	-rkt	-rks			
						-gd	-gz			
-g					-rg	-rgd	-rgz			
-f						-ft	-fs	-fts		
						-mft	-mfs			
						-lft	-lfs			
					-rf	-rft	-rfs			
-v						-vd	-vz			
						-lvd	-lvz			
					-rv	-rvd	-rvz			
-h						-ht	-hs			
	-ph						-phs			
	-th						-ths			
	-dh						-dhs			
	-fh						-fhs			
		*-ksh					*-kshs			
			-nh				-nhs			
			-ŋh				-ŋhs			
				-lh			-lhs			
					-rh		-rhs			
						-rd	-rdz			

* Irregular

Appendix C

Expansion of Table 9

TABLE C 1370 COMMONEST SYLLABLES, CLAST BY VOWELS, SHOWING INITIAL, MEDIAL, FINAL, AND WORD OCCURRENCES OF EACH

Syllable	Total		Initial		Medial		Final		Word	
	Oc	It	Oc	It	Oc	It	Oc	It	Oc	It
<i>n</i>										
n	343	76			46	19	297	57		
nt	119	17					119	17		
vn	98	4					98	4		
zn	59	15			13	8	46	7		
nd	44	22					44	22		
pn	41	5			9	3	32	2		
znz	32	4					32	4		
nz	20	10					20	10		
dn	16	4			2	2	14	2		
kn	15	3					15	3		
	787									
<i>l</i>										
bl	386	138			1	1	385	137		
l	264	45			19	9	245	36		
pl	218	12					218	12		
plz	34	8					34	8		
lz	30	4					30	4		
tl	28	7			16	3	12	4		
ld	28	18					28	18		
dl	20	8			1	1	19	7		
gl	20	7			1	1	19	6		
kl	17	9					17	9		
klz	15	8					15	8		
blz	13	8					13	8		
	1,073									
<i>a</i>										
and	3280	1							3280	1
rat	1346	2			1	1			1345	1

Syllable	Total		Initial		Medial		Final		Word	
	Oc	It	Oc	It	Oc	It	Oc	It	Oc	It
az	783	2					1	1	782	1
a	686	215	673	204	13	11				
hav	658	3	41	2					617	1
at	612	13	10	5	5	4	3	3	585	1
an	462	20	131	27	1	1			330	1
had	414	2	3	1					411	1
haz	394	4	4	3					390	1
nar*	335	9	29	8					306	1
kan	291	24	97	19	7	4			187	1
man	218	27	57	21	4	4	1	1	156	1
nan	184	1							184	1
ad	177	60	156	52	9	6			12	2
af	154	10	152	8	2	2				
am	126	20	25	10	26	9			75	1
hwar*	125	14	12	8			30	5	83	1
sal	120	1							120	1
stand	100	12	30	5	14	5	19	1	43	1
ak	104	34	98	29	4	3	2	2		
mat	90	11	80	5	8	5	2	1		
kar	88	12	88	12						
bak	87	9	9	5	1	1	2	2	75	1
last	86	4	7	2	2	1			77	1
fak	80	16	35	7	45	9				
hap	69	12	61	10	8	2				
kap	66	12	64	11			2	1		
pas	65	16	33	11	11	3	1	1	20	1
haf	63	2					5	1	58	1
bat	58	10	56	9			2	1		
fakt	58	1							58	1
hand	57	7	9	5			2	1	46	1
val	53	10	53	10						
mand	53	9			23	7	30	2		
trans	51	18	51	18						
sat	50	9	32	7	4	1			14	1
past	47	3					1	1	46	2
prak	44	10	42	8	2	2				
gan	42	4			19	3	23	1		
ask	37	2	7	1					30	1
land	36	7	8	3			3	3	25	1
akt	36	8	8	2	8	3	5	2	15	1
askt	36	1							36	1
ab	34	18	30	17			4	1		

* For explanation of * marking, see pp. 46 and 126.

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Syllable	Total		Initial		Medial		Final		Word	
	Oc	It	Oc	It	Oc	It	Oc	It	Oc	It
av	34	6	33	5					1	1
tab	33	10	7	5	26	5				
tak	32	7	5	3	8	2	18	1	1	1
taks	32	5	11	3			12	1	9	1
rad	32	1	32	1						
handz	32	1							32	1
par	30	9	9	4	14	4	7	1		
mas	30	9	26	6	2	2			8	1
naʃ	29	4	22	2	7	2				
aj	29	8	5	2	24	6				
trakt	28	8	5	2	6	4	17	2		
fam	28	4	28	4						
van	27	9	6	4	20	4			1	1
haps	26	1					26	1		
plan	25	2	3	1					22	1
pard*	25	6			2	1	23	5		
mar	25	6	25	6						
bad	24	3	8	1					16	2
ʃank	24	2	3	1					21	1
ap	24	12	24	12						
kant	23	3			1	1			22	2
ar*	23	1							23	1
al	23	16	9	8	14	8				
klas	22	6	8	5					14	1
war*	22	8	12	3			4	4	6	1
glad	21	1							21	1
fan	21	7	12	6					6	1
naç	21	4	21	4						
ʃats	21	1							21	1
sak	21	5	20	4					1	1
han	21	7	21	7						
as	21	12	14	8	7	4				
pat	20	5	20	5						
trav	20	12	17	10	3	2				
nan	20	8	7	4	13	4				
mag	20	9	20	9						
planz	19	1							19	1
par*	19	10	1	1	5	5	3	2	6	2
baŋk	19	7	7	4	2	2			10	1
kam	19	5	19	5						
pak	18	5	15	4					3	1
blak	18	6	5	5					13	1
bar	18	8	13	4	5	4				

152 *Relative Frequency of English Speech Sounds*

<i>Syllable</i>	Total		Initial		Medial		Final		Word	
	Oc	It	Oc	It	Oc	It	Oc	It	Oc	It
gram	18	5	1	1			15	3	2	1
farz*	18	3					18	3		
skwar*	18	3	2	1			8	1	8	1
vans	17	4			5	3	12	1		
aŋ	17	11	16	10	1	1				
task	16	1							16	1
fast	16	5	3	2	1	1	1	1	11	1
lak	16	4	5	3					11	1
dam	15	5	6	3					9	2
gaŋ	15	5	9	4					6	1
gal	15	10	14	9	1	1				
rap	15	4	15	4						
trak	14	5	1	1	9	3			4	1
kat	14	7	12	6					2	1
çap	14	4	12	3					2	1
flat	13	5	6	4					7	1
fakts	13	1							13	1
vast	13	3	3	2					10	1
sam	13	4	13	4						
hab	13	4	10	2	3	2				
paç	12	3			4	1	8	2		
pan	12	11	6	5	5	5			1	1
ban	12	8	8	5	4	3				
klard*	12	1					12	1		
staf	12	2					1	1	11	1
standz	12	2					4	1	8	1
ag	12	7	11	6	1	1				
trast	11	2			1	1	10	1		
graf	11	6			4	4	7	2		
farz*	11	2							11	2
lat	11	1	11	1						
wag	11	2	11	2						
akts	11	1							11	1
	13.453									
<i>a</i>										
ar	642	30	100	29					542	1
part	123	11	11	4	28	4	5	2	79	1
par	107	26	88	22	17	3			2	1
larj	69	5	27	2	2	1	1	1	39	1
for	65	3	1	1			1	1	63	1
gard	47	10	1	1	15	4	26	4	5	1

Syllable	Total		Initial		Medial		Final		Word	
	Oc	It	Oc	It	Oc	It	Oc	It	Oc	It
kar	43	15	24	12	2	2			17	1
çarj	39	5	12	3			4	1	23	1
farm	35	6	22	5					13	1
hard	31	5			29	3	2	2		
mor	31	11	31	11						
hard	31	7	10	6					21	1
fa	26	3	26	3						
hart	25	8	6	6	1	1			18	1
bar	23	13	13	9	4	3			6	1
start	22	3	13	2					9	1
arm	22	4	15	3					7	1
gar	19	6	15	5			4	1		
art	19	3	5	2					14	1
karz	18	1							18	1
mork	18	6	1	1	4	2	5	2	8	1
lar	18	1	18	1						
parts	17	1							17	1
marks	17	2					9	1	8	1
yardz	16	2					6	1	10	1
har	15	7	14	6	1	1				
çarjd	11	2					3	1	8	1
a	11	2			1	1			10	1
	1,560									
é										
ed	907	384	6	4	7	7	894	373		
en	675	121	581	95	35	21	59	5		
ez	529	202					529	202		
ment	402	86			5	5	389	80	8	1
men	382	46	138	10	44	19	36	16	164	1
ev	308	23	243	13	65	10				
eks	295	108	289	102	6	6				
nes	264	82	38	2	13	6	213	73		
ñem	262	2	34	1					228	1
hwen	246	2	9	1					237	1
est	186	49			27	4	159	45		
self	166	11	12	3	3	1	134	6	17	1
les	166	54	14	5	13	9	86	39	53	1
ent	162	36			26	9	136	27		
sed	161	1							161	1
ver	146	2	146	2						
get	127	9	16	1	4	4	18	3	89	1

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Syllable	Total		Initial		Medial		Final		Word	
	Oc	It	Oc	It	Oc	It	Oc	It	Oc	It
wel	122	4	9	3					113	1
let	121	10	57	3			13	6	51	1
sent	120	13	2	1	19	3	32	7	67	2
fen	115	1							115	1
jen	111	28	91	17	15	9	5	2		
nev	110	4	110	4						
e	110	19	64	13	46	6				
ens	106	27			19	7	87	20		
egz	104	30	101	29					3	1
tel	100	14	34	9	10	3	5	1	51	1
prez	99	8	99	8						
sen	99	37	79	27	20	10				
ek	99	29	82	24	17	5				
ments	97	42					97	42		
es	94	28	69	17	7	5	18	6		
ten	87	26	21	8	12	17			24	1
set	86	14	23	6	2	2	13	5	48	1
em	86	38	73	33	2	2	5	2	6	1
dent	82	18			15	4	67	14		
mem	80	11	46	6	34	5				
red	79	7	24	3	27	1	1	1	27	2
genst	73	1					73	1		
lek	73	20	1	1	72	19				
fekt	70	12			23	6	47	6		
ses	69	12			37	9	32	3		
rek	69	31	44	22	21	8			4	1
yet	68	1							68	1
jekt	66	11			14	6	52	5		
sev	64	7	64	7						
el	63	32	16	8	18	14	29	10		
gen	62	1					62	1		
yes	57	3	34	2					23	1
sek	56	9	54	7	2	2				
hed	56	12	18	6	1	1	10	4	27	1
pen	55	27	13	10	38	16			4	1
selvz	55	3					55	3		
pres	53	18	10	4	18	11	12	2	13	1
best	52	1							52	1
tem	52	21	21	10	11	9	20	2		
sez	52	1							52	1
went	50	1							50	1
left	48	1							48	1
tend	46	17	2	2	26	9	16	5	2	1

Syllable	Total		Initial		Medial		Final		Word	
	Oc	It	Oc	It	Oc	It	Oc	It	Oc	It
ker	46	8	23	7					23	I
kwes	45	5	44	4	I	I				
hev	45	7	45	7						
nekst	44	I							44	I
ej	44	8	II	4	I	I	29	2	3	I
sel	43	14	23	7	2	2	7	3	II	2
end	43	4					10	3	33	I
dens	42	14	2	I	I	I	39	12		
sept	41	6			10	4	31	2		
rekt	41	II			20	6	21	5		
send	40	6	5	I	6	3	I	I	28	I
bet	38	3	32	I			I	I	5	I
tent	38	15			6	4	27	10	5	I
gef	38	2			38	2				
rep	38	12	37	II	I	I				
ber	36	II	16	7	I	I			19	3
dren	36	2					36	2		
pekt	35	9			16	5	19	4		
spekt	35	8			27	6	8	2		
fel	35	5	19	3	2	I			14	I
spe	35	5	35	5						
sens	35	9	2	I	3	2	II	5	19	I
dem	34	12	21	7	13	5				
fer	34	9	7	3	13	4			14	2
rest	34	9	5	3	5	2	6	5	18	I
jest	33	4			9	I	23	2	I	I
held	33	4					4	3	29	I
dred	32	8	9	5	I	I	22	2		
ves	32	8	19	3	13	5				
sep	32	17	15	5	17	12				
et	32	16			5	4	27	12		
twen	31	2	31	2						
ven	31	16	11	5	20	11				
hwenf	31	I	31	I						
pre	30	7	17	2	13	5				
ter	30	10	27	7	2	2			I*	I
sents	30	I							30	I
ef	30	3	29	2	I	I				
lekt	29	II			14	6	15	5		
lent	29	8			I	I	27	6	I	I
help	29	3	4	2					25	I
dres	28	7	4	2	6	2	16	2	2	I

* Should be tar 1/1.

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Syllable	Total		Initial		Medial		Final		Word	
	Oc	It	Oc	It	Oc	It	Oc	It	Oc	It
vest	28	8			19	5	8	2	1	1
vent	28	9			11	6	17	3		
zent	28	7			19	4	9	3		
çer	28	7	15	6					13	1
prest	27	7					21	6	6	1
fen	27	3			27	3				
vel	27	10	2	2	25	8				
sted	27	7	9	5			17	1	1	1
res	27	8	7	4	3	2	17	2		
elz	27	8					27	8		
fens	26	7	1	1	4	2	19	3	2	1
meñ	26	2	26	2						
west	26	5	6	2			5	2	15	1
met	25	5	3	2	1	1	1	1	20	1
her	25	10	9	5	5	3			11	2
els	25	3	9	2					16	1
fend	24	6			19	5	5	1		
per	23	12	6	4	17	8				
tens	23	6			1	1	22	5	22	1
kept	23	2					1	1		
krend	23	4	5	2	1	1			17	1
kred	22	7	11	1	7	5	4	1		
ref	22	8	22	8						
des	21	11	19	9	2	2				
den	21	12	2	2	19	10				
ket	21	7	1	1	3	3	17	3		
freš	21	4			2	2	1	1	18	1
fek	21	9			21	9				
çek	21	2							21	2
jek	21	12			21	12				
lem	21	3	3	2			18	1		
pend	20	9	5	1	11	6	4	2		
test	20	8	3	2	5	3	2	2	10	1
spek	20	11	7	5	13	6				
streñh	20	2	1	1					19	1
nent	20	6					20	6		
mes	20	7	10	4	7	2			3	1
rev	20	11	18	9	2	2				
reg	19	10	17	8	2	2				
tempt	18	5	2	1	7	2	9	2		
mend	18	9	1	1	13	6	4	2		
er	18	10	11	6			5	2	2	2
plez	17	2	17	2						

Syllable	Total		Initial		Medial		Final		Word	
	Oc	It	Oc	It	Oc	It	Oc	It	Oc	It
dek	17	9	16	8	1	1				
kwest	17	5			3	2	10	2	4	1
frendz	17	1							17	1
mez	17	4	17	4						
eh	17	13					17	13		
te	16	8	5	2	11	6				
def	16	6	15	5	1	1				
gres	16	5			10	4	6	1		
felt	16	2					1	1	15	1
net	16	8	4	2	5	2	3	3	4	1
med	16	9	16	9						
ents	16	8					16	8		
ded	15	4	11	3					4	1
se	15	3	2	1	13	2				
fel	15	4	8	3					7	1
felz	15	1							15	1
jes	15	8	4	2	11	6				
nek	15	4	1	1	11	2			3	1
ren	15	5	7	2	8	3				
wed	15	3	15	3						
bred	14	3	1	1					13	2
kwent	14	7			7	3	7	4		
fed	14	4	9	1	2	2			3	1
step	14	1							14	1
sef	14	6	6	1	8	5				
jekts	14	5					14	5		
twelv	13	1							13	1
tes	13	4	13	4						
dev	13	5	11	4	2	1				
dents	13	5					13	5		
gets	13	2					1	1	12	1
spe	13	5	13	5						
jent	13	8			2	2	11	6		
jents	13	3					13	3		
lej	13	6	11	4	1	1			1	1
pel	12	6			3	2	9	4		
trenç	12	2	7	1					5	1
dwel	12	7	7	6					5	1
spent	12	1							12	1
zen	12	3			12	3				
sens	12	3			1	1	11	2		
mens	12	2					12	2		
rez	12	7	12	7						

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Syllable	Total		Initial		Medial		Final		Word	
	Oc	It	Oc	It	Oc	It	Oc	It	Oc	It
rej	12	6	12	6						
hens	12	2	3	1					9	1
helh	12	4	4	2	1	1			7	1
ets	12	6					12	6		
peſ	11	2			11	2				
bed	11	2	2	1						
beg	11	2	1	1					9	1
tekt	11	4							10	1
del	11	6	8	3	4	2	7	2		
geet	11	4			3	3				
splen	11	3	11	3			3	2	8	2
zes	11	5			6	4	5	1		
ſer	11	4	3	3					8	1
neet	11	6			3	2	7	3	1	1
welh	11	3	1	1			4	1	6	1
esta	11	2					11	2		
12,076										
ê										
ſte	478	1							478	1
e	464	72	88	21	163	49			213	2
ſter	323	2							323	2
de	266	25	19	6	15	11	131	7	101	1
we	211	17	3	3	2	1	99	11	107	2
mê	210	14	17	6	33	7			160	1
sê	207	17	36	5	59	10	1	1	111	1
nê	200	41	123	13	75	27			2	1
grêt	181	6	47	5					134	1
mêd	179	5	2	1			4	2	173	2
têk	171	19	68	2	5	4	12	12	86	1
tê	160	41	18	4	142	37				
le	154	45	70	15	58	27	17	2	9	1
mêk	141	6	35	4	1	1			105	1
pê	140	28	75	17	22	10			43	1
re	99	39	17	7	81	31	1	1		
et	97	49	6	3	50	33	18	12	23	1
kê	89	41	15	5	74	36				
stêt	89	6	53	5					36	1
kâm	82	2					11	1	71	1
plês	81	9	21	2	6	4	2	2	52	1
dêz	78	5					4	2	74	3
kês	71	2	19	1					52	1

Syllable	Total		Initial		Medial		Final		Word	
	Oc	It	Oc	It	Oc	It	Oc	It	Oc	It
let	70	30	22	3	23	18	13	8	12	1
sēm	67	1							67	1
mēn	59	12	28	6	3	2	12	3	16	1
be	54	18	46	13	3	3	2	1	3	1
trē	54	15	4	2	49	12	1	1		
vē	49	21	21	6	22	12	6	3		
sēv	49	3	16	2					33	1
nēm	48	3	8	2					40	1
plēn	45	10	11	3	1	1	15	4	18	2
tēn	43	16			16	8	27	8		
iēs	42	4	11	2	1	1			30	1
zē	40	10			39	9	1	1		
rē	39	6	34	5					5	1
plē	38	10	17	7	3	2			18	1
stē	38	9	15	7					23	2
trēn	37	3	18	2					19	1
gēv	36	1							36	1
fē	35	8	34	7	1	1				
rēnj	35	6			11	3	4	2	20	1
wēt	35	6	10	2	1	1	1	1	23	2
kēt	33	18			27	14	6	4		
sēf	33	8	17	6			1	1	15	1
fēl	32	4	19	3					13	1
rēt	32	11	1	1	7	5	6	4	18	1
tēnd	31	7					31	7		
gē	31	15	5	3	24	11			2	1
wēz	30	8					15	7	15	1
gēnj	29	5	6	2	1	1	1	1	21	1
strēt	28	9	12	5	3	1	2	2	11	1
strēnj	28	5	11	4					17	1
mēks	26	1							26	1
dēn	24	6	21	4	3	2				
dēt	23	4	3	1			6	2	14	1
brēk	22	4	6	2					16	2
tēl	21	6			11	2	7	2	3	2
fēh	21	5	13	3	1	1			7	1
vēl	21	5			16	2	4	2	1	1
sēl	21	7	8	3	1	1	3	1	9	2
nēt	21	16			15	10	6	6		
ēj	21	2	2	1					19	1
tēt	20	8			5	4	15	4		
ēr	20	4	20	4						
plēnz	19	6					17	5	2	1

<i>Syllable</i>	Total		Initial		Medial		Final		Word	
	Oc	It	Oc	It	Oc	It	Oc	It	Oc	It
pēn	19	4	3	I			12	2	4	I
pēnt	19	6	18	5					1	I
ēd	19	4	2	I			4	2	13	I
pēd	18	3					2	2	16	I
sēvd	17	I							17	I
mēt	16	7			5	4	11	3		
rēd	16	4	2	2			6	I	8	I
lēd	16	3	I	I			2	I	13	I
trēd	15	5	4	4					11	I
çēnjd	15	3					3	2	12	I
wēst	15	5	6	3					9	2
plēst	14	3					2	2	12	I
tēks	14	2					4	I	10	I
klēm	14	3			I	I	I	I	12	I
nēmz	14	I							14	I
pēj	13	2	5	I					8	I
trēnz	13	I							13	I
grē	13	10	6	6	2	2			5	2
gēt	13	10	I	I	4	4	6	4	2	I
slēv	13	2	8	I					5	I
mēl	13	4	I	I			I	I	11	2
trēt	12	10			7	5	4	4	I	I
vēd	12	8			7	5	5	3		
stēj	12	I							12	I
šep	12	2	I	I					11	I
bēs	11	4	5	2					6	2
gēj	11	I					11	I		
gēnd	11	I							11	I
frēd	11	I							11	I
hēt	11	2	2	I					9	I
rēs	11	3	2	2					9	I
rēz	11	4	4	3					7	I
wēj	11	3	7	2					4	I
	6,126									
i										
in	3284	356	1087	329	14	11	66	14	2117	2
i	3217	819	281	77	1676	547	1260	195		
ig	2353	760			21	13	2332	747		
ri	1625	330	823	160	323	103	479	67		
it	1416	52	26	I	54	25	120	25	1216	I
iz	1286	22	11	I			62	20	1213	I

Syllable	Total		Initial		Medial		Final		Word	
	Oc	It	Oc	It	Oc	It	Oc	It	Oc	It
li	1201	320			44	21	1157	299		
wif	841	12	104	8	4	1	6	2	727	1
di	835	278	673	211	146	59	16	8		
ti	830	227	1	1	241	92	588	134		
bi	621	61	603	50	11	8	7	3		
fis	572	1							572	1
hiz	517	1							517	1
wil	470	7	23	4	2	2			445	1
hwic	454	1							454	1
bin	329	2							329	2
its	293	12					47	10	246	2
him	285	2	51	1					234	1
if	276	4			7	2	6	1	263	1
si	263	96	61	20	106	42	96	34		
dis	261	106	255	101	4	4	2	1		
tri	206	32	8	2	79	22	119	8		
ni	187	68	18	4	106	47	63	17		
is	181	43			130	35	51	8		
lit	152	14	120	6	27	4	4	3	1	1
im	141	70	134	65	6	4	1	1		
ij	141	50			29	15	112	35		
tiv	136	57			29	14	107	43		
did	134	5	23	1	2	1	9	2	100	1
pri	130	51	111	38	19	13				
mi	130	35	9	6	39	23	82	6		
hiq	129	4					85	3	44	1
mit	124	21	1	1	86	12	37	8		
tin	122	24			69	16	49	7	4	1
giv	121	6	59	2	2	2	3	1	57	1
mil	117	11	99	8	7	2			11	1
tiz	115	40	1	1			114	39	†	
biz	114	6	104	4			10	2		
til	108	18			29	11	60	6	19	1
sit	104	12	86	9			4	2	14	1
ik	101	50			4	3	97	47		
fif	98	25	10	6	76	18			12	1
hiqk	93	3	19	1	1	1			73	1
id	86	24	2	2	11	3	73	19		
if	84	36	34	4	23	18	27	14		
min	83	20	42	10	37	9	4	1		
bil	82	25	25	4	42	20			15	1
hiqz	82	1							82	1
dis	81	11	5	2	76	9				

† tiz 20/1 should be added here—see note on page 162.

162 *Relative Frequency of English Speech Sounds*

Syllable	Total		Initial		Medial		Final		Word	
	Oc	It	Oc	It	Oc	It	Oc	It	Oc	It
sip	77	24	33	7			26	16	18	1
lik	76	7	2	2	1	1	72	3	1	1
liv	71	9	25	3	26	5			20	1
sis	70	20	30	11	15	4	25	5		
wiz	69	2	7	1			62	1		
tik	68	30	4	4	34	8	30	18		
siv	68	21	18	4	4	4	46	13		
mis	68	27	50	23	3	3			15	1
tis	65	22			23	16	22	5	20	† 1
sim	65	12	65	12						
dif	63	13	58	11	5	2				
fi	58	26	12	6	42	17	4	3		
stil	58	1							58	1
sid	58	13			57	12	1	1		
ziſ	57	9			57	9				
big	55	4	4	2	1	1			50	1
vis	55	4	1	1	6	2	48	1		
bli	54	27					54	27		
iqz	53	36					53	36		
sins	52	1							52	1
win	50	7	33	6					17	1
siks	49	3	12	2					37	1
wim	48	2	48	2						
ist	48	19			16	3	32	16		
bild	47	8	36	5	1	1	1	1	9	1
vi	44	16	7	4	29	10	8	2		
sti	44	15	1	1	43	14				
list	43	6	1	1	6	2	15	2	21	1
pi	42	20	10	5	32	15				
siç	41	2	41	2						
ji	40	18	1	1	27	11	12	6		
viz	39	7	4	1	35	6				
çil	39	3	38	2	1	1				
gin	38	3			28	2	10	1		
lim	35	11	23	4	12	7				
pik	34	4	30	3					4	1
vik	32	6	29	4	3	2				
pin	30	3			28	2			2	1
din	30	1	30	1						
nit	30	12	3	1	8	5	19	6		
niſ	30	10			21	8	9	2		
lib	30	10	23	6	7	4				
wiſ	30	3	2	2					28	1

† Should be tiz 20/1, on page 161.

Syllable	Total		Initial		Medial		Final		Word	
	Oc	It	Oc	It	Oc	It	Oc	It	Oc	It
izm	30	12					29	11	1	1
fig	29	3	29	3						
fif	28	2	28	2						
sig	28	12	24	10	4	2				
sin	28	15	21	10	4	3	3	2		
liq	28	18	1	1	2	2	25	15		
sil	28	9	9	4	8	2	11	3		
prit	27	4	27	4						
fit	27	10	7	3	1	1	12	5	7	1
sips	27	6					6	4	21	2
nig	27	4					27	4		
mis	27	9	2	2	25	7				
bilt	26	2					2	1	24	1
trik	26	3					25	2	1	1
spir	26	6	21	3	5	3				1
riz	26	6	1	1			25	5		
lij	26	8			20	6	6	2		
his	26	7	25	6	1	1				
il	25	8	6	2	2	1	10	4	7	1
pli	24	10	1	1	10	8	13	1		
triz	24	6					24	6		
brig	23	2	4	1					19	
tivz	23	11					23	11		
diz	22	10	16	7			6	3		
rit	22	6	14	1	1	1	6	3	1	1
si	21	15			20	14	1	1		
jir	21	5	3	2			18	3		
mid	21	7	16	4			4	2	1	1
wit	21	9	17	6	2	2			2	1
ists	21	10					21	10		
prin	20	2	20	2						
bit	20	6	10	4			1	1	9	1
tij	20	4			1	1	19	3		
fin	20	8	14	4	6	4				
milk	20	2	1	1					19	1
sist	19	9			7	5	12	4		
siq	19	5	18	4					1	1
zi	19	14			14	10	5	4		
krit	19	8	18	7	1	1				
ist	19	10					19	10		
kwik	18	5	15	4					3	1
viz	18	8	16	6	2	2				
skrip	18	8			18	8				

Appendix C

Syllable	Total		Initial		Medial		Final		Word	
	Oc	It	Oc	It	Oc	It	Oc	It	Oc	It
ɪ										
bi	967	8	111	3	2	2	6	1	848	2
hi	696	4	14	3					682	1
wi	537	4	7	2	1	1			529	1
mi	306	13	14	7	35	5			257	1
pi	238	20	197	7	41	13				
si	200	23	70	19	2	2			128	2
ri	193	51	186	46	2	2	1	1	4	2
ʃr	188	1							188	1
l	186	19	173	12	11	5	2	2		
ntz	152	1							152	1
htr	147	11	15	8	2	2			130	1
ytrz	93	1							93	1
hri	75	1							75	1
pis	74	7	10	5					64	2
liv	71	8	6	2	3	3	44	2	18	1
di	63	10	10	5	53	5				
mit	63	5	27	3					36	2
lç	63	1							63	1
nir	61	8	30	4	2	1	6	2	23	1
twiŋ	60	1					60	1		
yir	60	2	1	1					59	1
dir	58	4	10	3					48	1
iz	56	10	39	4	2	2	13	2	2	2
stii	51	3	1	1					50	2
sid	51	17	1	1	29	10	19	5	2	1
fri	50	6	18	5					32	1
fil	48	2	16	1					32	1
sin	48	5	4	2			3	1	41	2
nid	48	5	16	4					32	1
kɪp	47	8	10	3	5	4			32	1
mɪnz	46	1							46	1
fit	44	5			8	2	7	1	29	2
rid	43	5	18	3	1	1			24	1
ti	42	9	1	1	15	5	4	2	22	1
wk	42	8	13	6					29	2
plit	41	6			11	4	30	2		
hwit	38	3	4	1			2	1	32	1
pri	36	18	27	12	8	5			1	1
klir	34	5	11	4					23	1
min	34	6	10	4					24	2
spk	31	4	14	3					17	1
gri	30	10			15	7	15	3		

Syllable	Total		Initial		Medial		Final		Word	
	Oc	It	Oc	It	Oc	It	Oc	It	Oc	It
svd	30	4					30	4		
smz	30	1							30	'1
mfr	30	2	18	1					12	1
kris	28	5	1	1	15	2	12	2		
ttn	27	9					27	9		
dil	27	5	17	4					10	1
šin	27	2			9	1	18	1		
ld	27	5	24	4					3	1
lv	27	5	25	3			1	1	1	1
fr	26	10	24	8	1	1			1	1
stmd	26	1							26	1
dtd	25	2					24	1	1	1
riç	24	3	7	2					17	1
frld	23	3					3	2	20	1
nt	23	6	18	4			4	1	1	1
It	23	4	15	3					8	1
lt	22	11	18	8	4	3				
ltst	22	2					3	1	19	1
fr	21	5	2	1	2	1	4	2	13	1
strft	21	1							21	1
ntdz	21	1							21	1
ht	20	9	18	8	2	1				
stn	20	2							20	2
çf	20	2	6	1					14	1
tiç	19	5	10	4					9	1
dtp	19	5	8	4					11	1
stt	19	3	2	1			8	1	9	1
stz	19	6	1	1			2	2	16	3
çtp	19	4	11	3					8	1
kltn	18	5	5	3			4	1	9	1
swtt	18	5	7	4					11	1
pltz	17	2	2	1					15	1
srk	17	2	8	1					9	1
stv	17	6			3	3	14	3		
lts	17	4			3	1	12	2	2	1
plzrd	16	1							16	1
wtk	16	2							16	2
krist	15	1					15	1		
ptr	14	5			2	2	11	2	1	1
ptrd	14	2					14	2		
trtt	14	6	11	4			1	1	2	1
trfm	14	2			6	1	8	1		
krtt	14	4			1	1	13	3		

Syllable	Total		Initial		Medial		Final		Word	
	Oc	It	Oc	It	Oc	It	Oc	It	Oc	It
spɪç	13	2	5	1					8	1
rɪçt	13	1							13	1
rɪn	13	3					13	3		
rɪr	13	3	1	1			6	1	6	1
ɪst	13	4	8	2			1	1	4	1
bɪt	12	4	8	2					4	2
trɪ	12	3	3	2					9	1
krɪm	12	1							12	1
spɪd	12	5	5	4					7	1
krɪ	11	6	8	5			3	1		
grɪz	11	2					11	2		
fɪld:	11	2					1	1	10	1
sɪs	11	5	1	1	1	1	2	2	7	1
lɪf	11	3	1	1			10	2		
lɪvz	11	2					8	1	3	1
ɪrz	11	2					2	1	9	1
	6,507									
ə										
əv	4001	3					3	2	3998	1
wəz	850	2	11	1					839	1
ən	816	18	39	11	3	3	131	3	645	1
nət	596	4	5	2	2	1			589	1
kən	556	224	533	206	23	18				
frem	433	1							433	1
hwet	277	4	17	2			7	1	253	1
kəm	225	89	203	78	22	11				
pəs	194	11	138	6	50	5				
kə	166	51	163	40	3	2				
ə	155	37	144	30	11	7				
əf	96	13	93	12	3	1				
əb	95	32	95	32						
əp	88	20	73	16	15	4				
fər	80	19	55	17	25	2				
bəd	67	10	41	5	26	5				
ət	67	4			9	3	58	1		
prəp	66	8	57	6	9	2				
fəl	61	5	61	5						
gət	55	2			5	1			50	1
prəb	45	6	44	5	1	1				
spən	45	8	1	1	44	7				
məd	38	11	36	9	2	2				

<i>Syllable</i>	Total		Initial		Medial		Final		Word	
	Oc	It	Oc	It	Oc	It	Oc	It	Oc	It
æ										
lær	1136	23	96	19	3	2	2	1	1035	1
æl	679	15	210	12	1	1	2	1	466	1
ør	602	28	139	22	5	5			458	1
wær	221	3	7	2					214	1
løj	147	12	14	4	3	3	36	4	94	1
kæz	145	4	15	2			98	1	32	1
æl	72	4	2	2			27	1	43	1
wænt	71	3	27	2					44	1
hæt	68	2	1	1					67	1
ø	61	22	56	18	4	3			1	1
wæ	55	8	54	7	1	1				
smøl	54	3	8	2					46	1
kæl	47	6	6	3	1	1	2	1	38	1
lø	47	8	13	7					34	1
nør	46	3	12	1	6	1			28	1
mørn	46	2	46	2						
sø	43	3	1	1			1	1	41	1
førm	38	10			4	3	16	6	18	1
læs	35	2	15	1					20	1
pær	34	3			34	3				
kør	34	13	27	9	7	4				
køld	34	2					2	1	32	1
bræt	33	1							33	1
røj	32	1							32	1
hørs	31	4	19	3					12	1
kørd	28	7			27	6			1	1
føl	28	6	12	2	1	1	4	2	11	1
læst	28	1							28	1
kræs	25	5	3	2			15	2	7	1
kwær	24	3	14	2	10	1				
tæk	23	2	3	1					20	1
strøj	23	5	9	4					14	1
sørt	21	2	1	1					20	1
ført	21	5	12	4					9	1
gøn	20	1							20	1
førmcd	20	5					14	4	6	1
dræ	18	7	8	4	7	2			3	1
wærd	18	7	1	1	3	3	5	2	9	1
nørh	16	4	5	3					11	1
löz	16	1							16	1
øt	16	1							16	1
hrød	14	2					11	1	3	1

<i>Syllable</i>	Total		Initial		Medial		Final		Word	
	Oc	It	Oc	It	Oc	It	Oc	It	Oc	It
drən	14	2					1	1	13	1
körn	14	3	3	2					11	1
tət	12	1							12	1
wənts	12	1							12	1
bət	11	1							11	1
börn	11	2					1	1	10	1
kət	11	1							11	1
mər	11	6	5	4	6	2				
wərm	11	5	4	2	1	1	1	1	5	1
	4,277									
v					1	1	2	1	505	2
but	517	9	9	5	13	9				
un	466	164	453	155			2	1	383	2
wun	412	8	27	5					204	1
up	333	2	129	1					305	1
wur*	328	12	20	8	3	3			123	1
us	282	74			35	19	124	54	163	2
sum	277	19	108	12			6	5	123	1
kum	270	26	72	9	32	12	43	4		
uf	258	4	200	3	58	1			222	1
hur*	233	4	11	3						
pur*	194	33	184	28	10	5			1	1
sur*	178	37	167	27	9	8	1	1	165	1
must	165	1							132	1
suç	132	1							131	1
furst*	131	1							83	1
wurk*	124	13	34	8			7	4		
su	120	27	116	23	4	4				
sub	120	3b	111	34	9	4				
kun	113	6	113	6						
muç	107	2					3	1	104	1
wurld*	106	2	3	1					103	1
just	100	10	3	1	6	5	5	3	86	1
pub	83	9	79	7	4	2				
fur*	81	23	65	14	7	4	8	4	1	1
guv	78	9	78	9						
duz	69	4	16	3					53	1
nuh	61	1	61	1						
mun	60	1	60	1						
wuns	59	1							59	1

* For explanation of * marking, see pp. 46 and 126.

Appendix C

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Syllable	Total		Initial		Medial		Final		Word	
	Oc	It	Oc	It	Oc	It	Oc	It	Oc	It
num	58	7	53	4	3	1	2	2		
tur*	57	32	7	7	48	23	2	2		
gun	56	4	6	2			6	1	14	1
ur*	53	11	51	9	1	1			1	1
frunt	51	5			3	2	2	2	46	1
kuv	49	17	20	8	29	9				
dus	48	7			41	5	7	2		
struk	48	11	1	1	39	9			8	1
turn*	47	8	7	2	5	3	18	2	17	1
suk	47	10	45	9					2	1
mug	46	1					46	1		
kur*	45	20	27	9	13	9	5	2		
nuf	44	1					44	1		
luv	43	5	11	4					32	1
yug	43	3	2	2					41	1
turnd*	41	3					11	2	30	1
dun	40	1							40	1
kul	40	13	17	7	23	6				
trub	37	6	37	6						
hur*	37	8	37	8						
zult	37	3			9	2	28	1		
jus	37	12	31	7	4	3	2	2		
nus	36	12	12	7	2	1	22	4		
munhs	35	2							35	2
ur*	34	17	11	7	23	10				
kumz	32	3					9	2	23	1
gurl*	32	1							32	1
trust	31	9	8	4	2	2	4	2	17	1
muf	31	6	30	5	1	1				
run	31	4	12	2			1	1	18	1
hurd*	31	5	2	2			4	1	25	2
mur*	30	14	18	10	10	3	2	1		
munh	28	2	4	1					24	1
kus	27	11	17	6	3	3	7	2		
sus	27	16			8	5	19	11		
hun	26	4	26	4						
buv	25	1					25	1		
um	25	15	4	2			20	12	1	1
sun	24	7	10	5					14	2
kut	23	4	5	3					18	1
gunz	23	1							23	1
sug	23	6	23	6						
juj	23	4	14	3					9	1

172 *Relativ Frequency of English Speech Sounds*

Syllable	Total		Initial		Medial		Final		Word	
	Oc	It	Oc	It	Oc	It	Oc	It	Oc	It
wurh*	23	2	1	1					22	1
duk	22	12			21	11			1	1
hurh*	22	1							22	1
ut	22	7	21	6			1	1		
ukts	21	1					21	1		
tug	20	4	7	3					13	1
zurv*	20	7			6	3	14	4		
strukt	19	7			16	5	3	2		
sus	19	10	18	9			1	1		
wurd*	19	1							19	1
guriz*	18	1							18	1
furm*	18	7	2	2	1	1	5	3	10	1
wurdz*	18	1							18	1
turmz*	17	1							17	1
flus	17	1							17	1
nun	17	1							17	1
tunz	16	1							16	1
fun	16	5	12	4					4	1
suf	16	3	16	3						
lurnd*	16	2					1	1	15	1
ul	16	7	14	5	2	2				
dukt	15	3			5	2	10	1		
jur*	15	5	15	5						
lurn*	15	2	2	1					13	1
surv*	14	3	1	1			2	1	11	1
surç*	14	7	10	4	1	1	1	1	2	1
surh*	14	2			8	1	6	1		
mul	14	7	12	5	2	2				
brud	13	3	13	3						
wurks*	13	2					1	1	12	1
urh*	13	2	2	1					11	1
purts*	12	1					12	1		
blud	12	4	5	3					7	1
burn*	12	3	5	1	2	1			5	1
kup	12	3	8	2					4	1
vurt*	12	9			9	6	3	3		
sump	12	3	1	1	11	2				
rub	12	3	10	2					2	1
bur*	11	7	10	6					1	1
tus	11	4					11	4		
fund	11	1							11	1
vers*	11	5	4	1	1	1	5	2	1	1
strug	11	3	11	3						

Syllable	Total		Initial		Medial		Final		Word	
	Oc	It	Oc	It	Oc	It	Oc	It	Oc	It
stur*	11	5	9	4					2	1
ruʃ	11	4	1	1	1	1	1	1	8	1
wurs*	11	1							11	1
wurldz*	11	2							11	2
	7.773									
ə										
ə	3167	341	859	138	376	188	24	14	1908	1
ər	2084	431			631	193	1453	238		
lən	923	277			33	20	890	257		
tər	575	116			243	54	332	62		
əl	570	127			168	47	402	80		
ən	386	113			101	36	285	77		
ərz	379	158					379	158		
dər	290	50			85	32	205	18		
vər	251	47	1	1	71	40	179	6		
pər	235	57	115	30	33	21	27	5	60	1
ʃənz	212	90					212	90		
bər	142	23			23	9	119	14		
ərn	132	18			76	8	56	10		
mə	129	36	96	22	29	10	4	4		
kəl	127	44			28	12	99	32		
mən	126	28			7	3	119	25		
ərd	124	30			3	3	121	27		
təl	119	26			17	10	102	16		
tərz	105	48					105	48		
ənz	104	25					104	25		
ʃər	97	6			1	1	96	5		
rə	75	20	31	4	42	15	2	1		
lər	73	17			12	4	61	13		
pə	72	20	10	4	62	16				
yən	67	12			4	2	63	10		
tə	63	33			58	28	5	5		
nəl	63	21			18	6	45	15		
pəs	61	3			16	1	45	2		
ʃəl	56	19			9	5	47	14		
bərz	53	8					53	8		
sər	52	14	4	2	11	6	37	6		
ək	49	5	28	1	20	3	1	1		
wərd	47	16			2	2	45	14		
əns	41	22			3	3	38	19		
tənt	40	8					40	8		

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<i>Syllable</i>	Total		Initial		Medial		Final		Word	
	Oc	It	Oc	It	Oc	It	Oc	It	Oc	It
sən	40	7			22	4	18	3		
yənz	38	6					38	6		
təns	36	7					36	7		
kə	36	20	22	8	14	12				
jərz	36	5					36	5		
əlz	36	11					36	11		
çən	35	7			2	2	33	5		
əd	35	3					35	3		
dərz	33	9					33	9		
gər	33	11			3	2	29	8	I	I
jər	30	10			8	5	22	5		
tərd	29	13					29	13		
mər	29	8			12	2	17	6		
dərd	27	11					27	11		
gən	27	6			26	5	1	1		
sərz	27	5					27	5		
zənd	27	1					27	1		
nə	27	18			27	18				
nər	27	9			11	5	16	4		
ənd	26	2					26	2		
rəl	25	8			9	3	16	5		
ət	25	7			14	1	11	6		
də	24	11			16	7	8	4		
dəm	24	4					24	4		
fə	24	10	18	7	6	3				
çən	24	10			2	2	22	8		
fər	23	8			19	5	4	3		
nəns	22	6			2	2	20	4		
stəns	21	3			6	1	15	2		
yər	21	5			3	1	18	4		
ənt	21	14			4	4	17	10		
ərt	21	1					21	1		
trəl	20	2					20	2		
kwəl	20	2			10	1	10	1		
məl	20	6			1	1	19	5		
stənt	18	4			9	2	9	2		
əz	18	2					18	2		
çənz	17	2					17	2		
bərd	16	5					16	5		
fərt	16	4			5	2	11	2		
vəl	16	5			1	1	15	4		
sə	16	11	11	7	5	4				
jən	15	2					15	2		

Appendix C

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Syllable	Total		Initial		Medial		Final		Word	
	Oc	It	Oc	It	Oc	It	Oc	It	Oc	It
lə	15	10								
əpt	15	4	3	3	9	5	3	2		
trə	14	0	2	2			15	4		
təm	14	4			3	3	9	3		
gəl	14	4			10	3	4	1		
sənz	14	2			1	1	13	3		
pərz	13	3					14	2		
tən	13	5					13	3		
zəndz	13	1			6	2	7	3		
hən	12	1					13	1		
və	12	8	4	2	8	6	12	1		
hər	11	1	11	1						
	12,350									
o										
o	707	186	328	50	247	114	73	19	59	3
no	478	24	42	14	11	6	2	2	423	2
so	446	35	37	15	104	18			305	2
on	276	6	200	4			1	1	75	1
for	228	24	34	18	1	1	157	3	36	2
pro	226	84	210	75	12	8			4	1
mor	221	4	7	1			2	2	212	1
to	179	46	46	7	125	35	8	4		
go	179	12	61	2	5	5	40	4	73	1
most	155	7	2	1			48	5	105	1
po	153	39	100	15	52	23	1	1		
mo	116	39	75	18	40	20	1	1		
fɔz	104	1							104	1
old	84	4	9	3					75	1
port	77	17	3	3	25	9	46	4	3	1
hom	69	6	6	5					63	1
dont	67	1							67	1
hol	61	8	10	3			1	1	50	4
fɔ	60	4					19	2	41	2
lo	60	21	28	14	3	2	13	4	16	1
fors	54	9	1	1	31	6	4	1	23	1
sol	58	8	52	7					6	1
hold	51	13	14	3	5	3	10	6	22	1
lon	50	4	4	2			21	1	25	1
ʃe	48	6	16	4					32	2
por	47	17	17	8	24	7			6	2
kors	46	4	2	2			7	1	37	1

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Syllable	Total		Initial		Medial		Final		Word	
	Oc	It	Oc	It	Oc	It	Oc	It	Oc	It
boh	45	1							45	1
non	45	2							33	1
ro	44	20	7	7	21	9	12	1	1	1
ko	42	27	29	16	8	7	15	3		
hop	41	6	11	5			5	4		
rod	37	5	1	1	1	1	9	1	30	1
poz	35	11					30	6	26	2
told	34	2			4	4	1	1	1	1
kol	34	2					1	1	33	1
noz	32	2					1	1	33	1
tro	30	10	1	1	29	9			32	2
ports	29	4					26	3		
pozd	28	7					28	7	3	1
not	28	4	4	3					24	1
do	27	12	12	7	2	2	13	3		
forst	27	3					18	2	9	1
trol	25	5			7	3	18	2		
vot	25	6	5	2	11	2	1	1	8	1
forh	24	5	5	2			3	1	16	2
oz	24	9					24	9		
stor	23	5	9	2	2	1	2	1	10	1
rodz	21	2					11	1	10	1
kort	20	1							20	1
bord	19	5	1	1			2	2	16	2
od	19	4					19	4		
klos	19	3	6	2					13	1
klozd	19	3					14	2	5	1
kold	18	2	1	1					17	1
roz	18	3					8	2	10	1
post	17	8	14	7					3	1
bro	17	5	15	3	2	2				
wont	17	1							17	1
gro	15	7	11	6					4	1
gron	15	4	1	1			1	1	13	2
gold	15	2	3	1					12	1
sold	15	1							15	1
zors	15	2			9	1	6	1		
bor	13	3	2	2					11	1
goz	13	3					2	2	11	1
hro	13	3	3	1			2	1	8	1
kloz	12	6	5	2	4	2	1	1	2	1
glo	12	5	11	4					1	1
spok	12	2	5	1					7	1

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<i>Syllable</i>	Total		Initial		Medial		Final		Word	
	Oc	It	Oc	It	Oc	It	Oc	It	Oc	It
<i>ī</i>										
tū	3318	10			2	1	189	6	3127	3
yū	862	23	52	18	9	3	26	1	775	1
hū	252	3	4	2					248	1
dū	239	2	36	1					203	1
yūr	230	2							230	2
hru	96	3	14	1					82	2
yūr2	56	1							56	1
yūz	54	6	19	4			3	1	32	1
fūd	53	1							53	1
fūr	53	11	12	2	14	6	6	2	21	1
sūn	48	2	6	1					42	1
yūs	48	7	17	4			3	2	28	1
yūzd	45	1							45	1
hūz	42	1							42	1
mūv	38	8	19	4	4	2	4	1	11	1
nūn	37	3					32	2	5	1
trū	30	1							30	1
hūm	28	1							28	1
trūps	26	1							26	1
skūl	25	3	2	2					23	1
pūr	24	2	1	1					23	1
rūm	24	4	1	1			2	2	21	1
klūd	23	7			15	4	8	3		
prūv	21	9	1	1	12	6	3	1	5	1
trūh	21	1							21	1
stūpt	19	1							19	1
mūvd	18	2					4	1	14	1
jū	16	6	15	5	1	1				
klū	14	7			14	7				
rūl	13	3	7	2					6	1
yūn	13	3	12	2	1	1				
tūr	12	8	9	6			1	1	2	1
prūvd	11	3					7	2	4	1
blū	11	1							11	1
lūz	11	3	3	2					8	1
wūnd	11	3	9	2					2	1
	<u>5,676</u>									
<i>ai</i>										
aur	378	4	21	2					357	2
ait	332	29	43	25			85	3	204	1

Appendix D

Letter frequencies

Table D1 gives the relative frequency of the letters of English, arranged in alphabetic order. The column headed *Occurrences* gives the total number of times each letter occur, while the column headed *Items* gives the number of different places in which each occur. Below the totals, the occurrences of the apostrophe and hyphen in these 100,000 words are similarly shown. Only 7 diphthongal or diacritic letters occur in the entire 100,000 words; namely æ 2, ô 2, ö 2, and i 1.

Table D2 gives the same data arranged in order of frequency, plus an analysis showing the number of occurrences of each letter initially, medially, or finally in words, or as a word by itself.

Comparing Table D2 with the data on page 133 it appears that:

3	letters make up over	25%	of the total letters.
6	"	50%	"
11	"	75%	"

Comparison with the data of Table 17, showing a total of 365,419 occurrences for the same 100,000 words, shows an excess of 19 87% of letters over sounds. In other words, as compared with a simple one sign one sound phonetic spelling, 1 letter in 6 of our present conventional spelling is quite superfluous, involving a direct waste, in the mere cost of such superfluous writing and printing alone, of over \$600,000,000 annually in the United States alone.

Addendum—1950. The foregoing estimate of \$600,000,000 annual waste was based on printing [and writing] costs and quantities as of the 1920 United States census. On the basis of the 1950 census figures, not yet available, this annual waste will, beyond question, largely exceed \$1,000,000,000 a year.

TABLE DI RELATIV FREQUENCY OF LETTERS IN ENGLISH
ARRANGED IN ALFABETIC ORDER

Letter	%	Occur- rences	Items
a	7.88	34,536	5,352
b	1.56	6,838	1,207
c	2.68	11,747	3,148
d	3.89	17,046	3,394
e	12.68	55,465	9,493
f	2.56	11,199	1,164
g	1.87	8,191	2,079
h	5.73	25,138	1,634
i	7.07	30,955	6,058
j	0.10	421	117
k	0.60	2,610	526
l	3.94	17,261	3,668
m	2.44	10,678	1,916
n	7.06	30,902	5,480
o	7.76	33,993	4,305
p	1.86	8,162	2,154
q	0.09	403	122
r	5.94	26,051	5,569
s	6.31	27,642	6,069
t	9.78	42,815	5,366
u	2.80	12,285	2,448
v	1.02	4,481	907
w	2.14	9,396	712
x	0.16	687	214
y	2.02	8,837	1,189
z	0.06	284	131
Totals	100.00	438,023	74,422
		674	159
		28	9

TABLE D2 RELATIV FREQUENCY OF LETTERS IN ENGLISH,
ARRANGED IN ORDER OF FREQUENCY, WITH ANALYSIS OF
POSITION OF OCCURRENCE IN WORDS

Letter	%	Occur rences	Items	Initial	Medial	Final	Word	Letter
e	12.68	55,465	9,493	2,123	32,472	20,870		e
t	9.78	42,815	5,366	17,182	15,210	10,423		t
a	7.88	34,536	5,352	9,477	22,791	148	2,120	a
o	7.76	33,993	4,305	7,764	21,608	4,617	4	o
i	7.07	30,955	6,058	6,691	23,094	15	1,155	i
n	7.06	30,902	5,480	2,317	20,521	8,064		n
s	6.31	27,642	6,069	6,119	9,508	12,015		s
r	5.94	26,051	5,569	2,165	17,734	6,152		r
h	5.73	25,138	1,634	4,916	17,772	2,450		h
l	3.94	17,261	3,668	2,118	12,155	2,988		l
d	3.89	17,046	3,394	2,756	4,227	10,063		d
u	2.80	12,285	2,448	1,214	10,278	793		u
c	2.68	11,747	3,148	4,327	7,170	250		c
f	2.56	11,199	1,164	4,037	2,550	4,612		f
m	2.44	10,678	1,916	4,010	5,198	1,470		m
w	2.14	9,396	712	6,839	1,604	953		w
y	2.02	8,837	1,189	1,454	971	6,412		y
g	1.87	8,191	2,079	1,588	3,588	3,015		g
p	1.86	8,162	2,154	3,476	4,213	473		p
b	1.56	6,838	1,207	4,788	2,006	44		b
v	1.02	4,481	907	537	3,944			v
k	0.60	2,610	526	436	1,373	801		k
x	0.16	687	214		626	61		x
j	0.10	421	117	256	165			j
q	0.09	403	122	171	232			q
z	0.06	284	131	15	265	4		z
Totals	100.00	438,023	74,422	96,776	241,275	96,693	3,279	
		674	159	17	644	13		
		28	9		25	3		

Addenda and errata

Number Page

①

5

Two other word counts, published since the first edition of this study, deserve special mention :

Horn, Ernest, *A basic writing vocabulary*, University of Iowa Monographs in Education, First series, No. 4, Iowa City, 1926.

This list, subtitled "10,000 words most commonly used in writing," although subject to several serious criticisms which substantially limit its usefulness, is nevertheless the best single list of its type yet published, and the one to which I have chiefly turned for a substantially longer word count list than afforded by my own investigation. Its two most serious deficiencies are: failure to make an actual count of 372 of the commonest words, together making up a presumptive 60% of all running words investigated, which are estimated on the basis of an earlier and much smaller study which lumped together the data from several still smaller and diversely planned and executed investigations; and failure to report actual unweighted frequencies—each published figure having been multiplied by an unstated factor from 1 to 5, dependent on the number of different categories of counted material in which the word occurred. In consequence, available data indicate that the 9 commonest words (which make up over 25% of my own study) are under-estimated by about 50%; and none of the published data can be used as a basis for determining the frequency of occurrence of syllables or sounds.

Horn, Ernest, and Peterson, Thelma, *The basic vocabulary of business letters*, Gregg, 1943.

This list deals with 1,436,000 running words of business correspondence which were a part of the 5,137,000 running words which formed the basis of the Horn list reviewed above. It suffers from the same defect of failing to count 372 of the commonest words, and under-estimating the commonest of these as much as 50%; but in other respects is a very valuable source of data for the limited field investigated. The alphabetic list gives all words found in the material, not merely the most frequent, with both weighted and unweighted frequencies; and is supplemented by a list of over 5,000 most-used words (out of a little less than 15,000 different words) in order of frequency.

Number Page

- (2) 17 The 500 commonest words here reported wil form over 66%.
- (3) 19 For 328 been read 329 been.
31 " 328 " " 329 "
- (4) 20 Add 85 today.
20 Omit 68 today.
25 Omit 17 to-day.
40 For 68 today & 17 to-day read 85 today.
- (5) 22 Add 40 light/7
26 Omit 18 light.
36 For 18 light read 40 light/7.
- (6) 29 Add 11 doctrine/3.
33 " 11 "
- (7) 51 For starz* 11 read starz* 7 (stêrz 4).
68 " " " " "
106 " " " " "
- (8) 52 For ter 30 read ter 29.
62 " " " "
- (9) 114 " " " "
57 For hrû 96 read hrû 94.
69 " " " "
- (10) 117 " " " "
135 This alfabet, which was adopted by the Simplified Spelling Board in 1922, was used in this volume publisht in 1923. In 1928, this SSB alfabet was superseded by the SRA (Spelling Reform Association) fonetic alfabet, prepared by a joint committee of the Spelling Reform Association and the Simplified Spelling Board with the aid of Frederick W. Goudy, the foremost type designer of his generation. Copies of the SRA alfabet may be obtained from the Simpler Spelling Association, Lake Placid Club, N.Y.
- (11) 145 Add (midst -dst).
This changes the figure 181 on pages 139, 140, 146, and 148 to 182.
- (12) 147 Add -dst (see note (11) immediately above).