

UNCOMMON TERMS
FOUND IN HIGH SCHOOL
PHYSICS AND CHEMISTRY TEXTBOOKS

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PHYSICS AND CHEMISTRY TEXTBOOKS

By

DAVIDA ELIZABETH PHILLIPS

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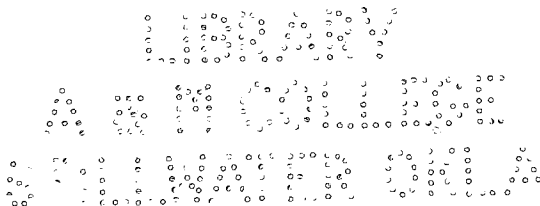
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APPROVED BY:

Clarence M. Pruitt
Chairman, Thesis Committee

W. C. Dunaway
Member of the Thesis Committee

J. C. Cooper
Head of the Department

D. C. M. Intosh
Dean Graduate School

137060

PREFACE

This investigation developed from a suggestion by Dr. Clarence M. Pruitt of the School of Education of Oklahoma Agricultural and Mechanical College, concerning the need for information regarding the technical vocabularies of recent science textbooks. To Dr. Pruitt goes my most sincere appreciation for his valuable suggestions and untiring help in the investigation. The deepest gratitude is felt for his generosity in lending from his personal library the textbooks used as source material. I wish also to express my appreciation to my sisters Lena and Anna Lee Phillips for their help in the work.

D. E. P.

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CHAPTER I

INTRODUCTION

PURPOSE OF THE STUDY

A knowledge and understanding of certain technical terms are essential in learning science. One of the chief reasons for failures in science courses or for difficulty in understanding science, especially physics and chemistry, has been the large technical vocabulary used in science. Some investigations have been made to determine the technical vocabulary of science reading materials. Professor S. R. Powers of Teachers College, Columbia University, noted leader in science education, said, "...authors of textbooks are using in their books many words which children will never see again after they have finished the required classroom work...".¹ These investigations have had a marked influence on science textbook writers since the publication of the investigations. Textbook writers today are much more conscious of the need of paying attention to the technical vocabularies in their science textbooks.

It is the purpose of this investigation to show to what extent authors of recent textbooks in chemistry and physics have accomplished their aim in using fewer uncommon words than prior to the publication of these investigations. In order to ascertain the degree of accomplishment of this aim, the frequencies with which these uncommon words occur have been determined from an analysis of three recent textbooks in chemistry and three recent textbooks in physics.

1 S. R. Powers, A Vocabulary of Scientific Terms for High School Students, Teachers College Record, 28, p. 232, November, 1926.

OTHER INVESTIGATIONS IN SCIENCE VOCABULARY

Of these previous investigations, those done by Powers,² Curtis,³ and Pressey⁴ are outstanding.

Powers included in his study several science textbooks, popular scientific books, and miscellaneous material including magazine articles on scientific subjects, a running total of 2,110,000 words. He found that 50 percent or more of the 14,000 uncommon words used in these books could not be classified as important.⁵

After analyzing 630 articles of miscellaneous scientific content from six American newspapers, Curtis concluded that, "the percentage of 'uncommon' words found in them is on the average only 3.6 percent. Even in highly technical articles with 9.5 percent of the words scientific terms, only 3.4 percent of the words are uncommon."⁶ This indicates that the pupils will probably never see many of the technical words after completing their science courses.

Pressey found that the technical vocabulary to be acquired during a year of study of the sciences was greater than the vocabulary acquired during a year of study of a foreign language. Pressey suggested that her lists of scientific terminology may "be of value in finding what proportion of words of the list appears in one text as compared with

2 Ibid., p. 220-245.

3 Francis D. Curtis, Second Digest of Investigation in the Teaching of Science, pp. 353-356.

4 Luella Cole Pressey, "The Determination of the Technical Vocabulary of the School Subjects", School and Society, XX, pp. 91-96.

5 Powers, op. cit., p. 221.

6 Curtis, op. cit., p. 355.

another."⁷

These investigations have called the attention of the textbook writers to the vocabulary difficulties of pupils and the urgent need for keeping uncommon words to a desirable minimum.

PROCEDURE

To determine what uncommon words were used in the physics and chemistry textbooks examined, each book was read and every word checked with Thorndike's Teacher's Word Book of 20,000 Words.⁸ If the word did not appear in the Thorndike list, it was listed, and each additional occurrence of the word throughout the book was tabulated in a frequency distribution column. For this tabulation one side of a sheet of drawing cardboard (22" x 28") was used for each book. The sheet was divided into columns in which the words were listed alphabetically. It was soon learned that the procedure might be simplified by counting all the frequencies of an uncommon word on two opposite pages. This was repeated for every uncommon word found on those two pages before turning on to the next page.

All sections of each book were examined. In addition to the body of the book, words were taken from the preface, table of contents, appendix, and index.

When the six books had been read and all frequencies checked, the uncommon words of each textbook were counted. The terms were compiled into one list for the chemistry textbooks and one for the physics textbooks. These composite lists were used for all subsequent counting and

7 Pressey, op. cit., pp. 95-96.

8 Edward L. Thorndike, Teacher's Word Book of 20,000 Words.

figuring of percentages. Except for the original listing of words and their frequencies, which was done only once, all the transferring of words from one list to another and the counting of words was checked until two successive countings confirmed the number.

Criteria for elimination of words not included in Thorndike's list were similar to those used by Powers⁹ and Pressey.¹⁰ Hyphenated words were not included unless they had a meaning not clearly conveyed by each of the words from which they were derived. Also eliminated were words ending in -able, -like, -less, and words with the prefixes un-, and non-. Persons' names and geographical names were in the group which was excluded because they did not add to the difficulty of the reading material. Groups of two words were included if they were used as single terms with special connotations.

No provision was made to include common words that have scientific connotations unless they were set off in quotation marks by the author. Undoubtedly there would be several hundred of these to add to the difficulty of the reading material.

9 Powers, loc. cit.

10 Pressey, loc. cit.

CHAPTER II

THE INVESTIGATION

This chapter includes a detailed description of the investigation. A comprehensive listing of each uncommon word found in all of the six science textbooks analyzed (see Tables III and IV) is followed by a series of tables descriptive of certain group aspects of the detailed analysis. These tables relate to such data as frequency and percentage distribution according to the total number of occurrences of the word (see Tables V, VI, VII, and VIII) and the number of important uncommon words based on frequency of occurrence and number of sources in which the words were found (see Table X). A listing of important words is found in Table XI.

Recently published and widely used textbooks in physics and chemistry were used as source books for the analysis. Three textbooks were selected from the field of physics and three from the field of chemistry. The names and authors of the textbooks are given in Table I. Each textbook is referred to hereafter by a letter designation as indicated in this table.

Table I
SCIENCE TEXTBOOKS USED IN THE INVESTIGATION

Author	Title	Key Letter
Dull	MODERN PHYSICS	A
Millikan-Gale	NEW ELEMENTARY PHYSICS	B
Williard	EXPERIENCES IN PHYSICS	C
Black-Conant	NEW PRACTICAL CHEMISTRY	D
Hopkins	CHEMISTRY AND YOU	E
Horton	EVERYDAY CHEMISTRY	F

Table II, page 7, shows the results of the first compilation of data on the number of physics and chemistry terms. This data is shown in comparison with that of Powers. Further information on Powers' survey could not be obtained.

Table II
TOTAL NUMBER OF UNCOMMON WORDS FOUND IN TEXTBOOKS

Book	Pages	Uncommon words	Uncommon words per page
A (Physics)	607	900	1.48
B	637	751	1.17
C	662	596	.90
Total	1906	2247	
Average	635	749	1.17
D (Chemistry)	621	1057	1.70
E	802	1541	1.92
F	451	673	1.49
Total	1874	3271	
Average	625	1090	1.74
Powers' Selections			
1 (Physics)		1526	
2		1461	
Total		2987	
Average		1493	
3 (Chemistry)		1786	
4		1535	
Total		3321	
Average		1661	

Table II shows significant reductions in the number of uncommon words in the more recent science textbooks as compared with the ones examined by Powers. A striking fact is that from the three physics

textbooks used in this survey there were only 2247 uncommon words, while there were 2987 in the two books used by Powers. The average number of uncommon words for each of the recent books was 749, while the average obtained by Powers was 1493.

The reduction in the chemistry textbooks is noteworthy. The three recent textbooks had a total of 3271 words, while the two used in Powers' investigation had 3321 words. This difference is not as striking as it is in the case of the physics books. It would probably have been greater had it not been for Textbook E, which had an unusually large number of pages (802) and, consequently, a large number of uncommon words (1541). If another textbook had been selected, or if many more textbooks had been used in this survey, the average number of uncommon words in each book would probably have been much smaller than the investigation shows.

One reason for such a decided contrast in the total number of uncommon words might be that Powers used Thorndike's list of 10,000 common words,¹ while in this investigation Thorndike's later list of 20,000 was used.² His revised list included many scientific terms not counted in this survey, but which did appear on Powers' list. These terms are those which have become common after the publication of Thorndike's first list. If they are now common words, they should add no difficulty for the pupil in science.

Table I shows a decided contrast in the total number of uncommon words found in the textbooks being examined. This difference in the

1 Edward L. Thorndike, Teacher's Word Book.

2 Thorndike, loc. cit.

number of words might well be one deciding factor in selecting a textbook. A pupil reading Textbook A would encounter an average of 1.48 new words on every page read, while Textbook B would have 1.17 new words, and Textbook C would furnish only .9 new words per page.

The words from the three physics books were compiled into one list for the purpose of comparing the frequency with which a word occurred in one book with its frequency in another. This was repeated for each of the chemistry textbooks. The words and their frequencies are shown in Tables III and IV.

Table III
UNCOMMON WORDS IN PHYSICS

WORD	MILLIKAN			TOTAL
	DULL	GALE	WILLIARD	
abcess		1		1
aboveground			1	1
abrade	1			1
abscissa	4			4
absolute humidity	9	3	4	16
absolute temperature	18	23	2	43
absolute zero	3		2	5
absorption spectra		2		2
absorptive spectra	6			6
abutments	1			1
acclimated			1	1
achromatic	3	6		9
acidimeter	4			4
acidulate	1	1		2
acclinic	3			3
acoustic	4	9		13
actinic rays		2		2
actinium		1		1
activate	1	2		3
adsorption	21			21
adsorption spectra		2		2
aeronautics			1	1
agonic	4	3	3	10
aileron	8	1		9
air brakes	10		3	13
air cell			10	10
air chamber			5	5
air conditioning	8	7	6	21
air craft			1	1
air drill		1	1	2
air drome			1	1
air foil	5			5
air gun			4	4
air log	2			2
airport	1			1
air pump	6	29	24	59
airship		3		3
airslake			1	1
alcoholometer	3			3
"Alfol"	2			2
algebraic	4	11		15
alpha centauri		1		1
alpha rays	22	31		53
alternating current	89	78	71	238
alternating current- direct current meter			3	3

alternator	10			10
altimeter	6	2	4	12
alto stratus	1			1
aluminum oxide	4			4
ammeter	33	28	72	133
ammeter-voltmeter		3		3
ammonium chloride	2	4	2	8
ammonium hydroxide			1	1
ammonium nitrate		2		2
ammonium sulfate			1	1
amperage	11	3	5	19
ampere hour	1	3	5	9
amplifier	17	35	9	61
anastigmat	6			6
Andromeda		1		1
aneroid	9	5		14
aneroid barometer			13	13
angle of declination	2		2	4
angle of deviation	3			3
angle of elevation	2			2
angle of incidence	30	13	9	52
angle of inclination			4	4
angle of rebound	6			6
angle of reflection	16	3	8	27
angle of refraction	8	2		10
angstroms		8		8
aniline		2		2
annular	4			4
anode	36	20	2	58
anticathode		3		3
anticyclone	4		4	8
antifreeze	9	3	9	21
antifriction	3			3
antinoise			2	2
aqua ammonia	2	1		3
aqueous humor		1		1
Archimede's principle	13	15	16	44
arc lamp	11	12	4	27
arrowhead	7		1	8
ashpit		1		1
aspirator	5	6	25	36
aspirating siphon	2			2
astigmatic			3	3
astigmatism	7	4	8	19
athermous	2			2
atomize		2		2
audibility	7	2	2	11
audio-frequency	24	11		35
audion	17	6		23
audiphone	6	4		10
audio-transformer			1	1
aurora borealis	1	2		3
autoclave	1			1

babbitt		1		1
babbling	3			3
backwater			1	1
baffle plates			1	1
baffle wall	4			4
bakelite	3	1		4
baking soda			1	1
balance wheel	11	6	10	27
ball-and-ring			1	1
ball bearing	4		1	5
balloonist	3	2	1	6
balsa wood	5		1	6
baritone		2		2
barium sulfate	1			1
barograph	5	3		8
barometric	3	7		10
baroscope	2			2
bass viol		1		1
bath tub		1	1	2
bathysphere	4	5	3	12
battery jar			18	18
bauxite	1	1		2
beam balance		3		3
Becquerel rays	7	4		11
bedrock	1			1
bel	3			3
bell crank			1	1
bell jar	3	3	19	25
"bends"			1	1
benzine		1		1
beriberi		1		1
Bernoulli's effect	9	8	11	28
beryllium	2	2		4
beta rays	12	29		41
Betelgeuse	4			4
bevel gears	3	1	3	7
bicyclist		1		1
bifocals	2			2
bilge keel	1			1
billboard			1	1
billionth	1			1
bimetal	1		2	3
binding post	14	1	22	37
biplane	2	1		3
birdcall		1		1
bismuth subnitrate	1			1
blast furnace	1			1
"blind flight"	3			3
blind spot			1	1
blinker			1	1
"blinker button"			6	6
"block and tackle"	6	8		14
blowout	2		2	4

blowtorch			1	1
blueprint	2			2
bluing			1	1
bob-sled	1			1
bolt clipper			3	3
bombardment	1	6	1	8
bomb calorimeter			2	2
bone-conductor receiver		2		2
bookbinder		1		1
bootstraps			1	1
borings			2	2
boron		1		1
bottle imp	3			3
"bottled" gas			1	1
Bourdon pressure gauge	3	3	12	18
brace and bit	1	1		2
brake bands	5			5
brake drum	6	1		7
brake shoe	7	1	1	9
brazed weld	1			1
breakage	1	1		2
bright-line spectra	7	6		13
British Thermal Unit	41	30	74	145
Brownian Movement	3	6	3	12
bung	1			1
Bunsen burner	1	16	51	68
Bunsen photometer	6	3	5	14
bunt			1	1
butterfat		1		1
butterfly		1		1
buzzer			6	6
cadmium		2		2
cadmium sulfate		2		2
caesium	2			2
caisson	5	1	7	13
calcite	1			1
calcium carbide	2			2
calcium chloride		1		1
calcium hydroxide			21	21
calibrate	6	13	13	32
camber	3			3
camera obscura	2			2
campfire			3	3
camphor gum	3	1		4
camshaft	1	2	7	10
candle-power	49	27	39	115
capita		1		1
cap support	1			1
carbolic acid			1	1
carbon bisulfide	2	2		4
carbon dioxide	14	12	13	39
carbon disulfide	1	3		4
carbonize	1		1	2

carbon monoxide	2		1	3
carbon tetrachloride	2	1	1	4
carborundum	3			3
carburetion		1		1
carnalite	1			1
carrier waves		3		3
Cartesian Diver	6	5		11
cast iron	1	2	3	6
catch-bucket			15	15
caterpillar tractor	2	4		6
cathode	45	33	2	80
cathode ray	41	38		79
catskin	8			8
caustic potash	1	1		2
caustic-soda primary battery			5	5
cellophane	2		3	5
cellulose acetate	1			1
celotex	1			1
center of buoyancy	4			4
center of curvature	27	6	17	50
center of gravity	57	40	53	150
center of mass			2	2
center of movement	12			12
center of oscillation	13		8	21
center of percussion	10		7	17
centiliter			2	2
centimeter-gram-second	3	1		4
centrifugal pump		3	7	10
centrifuge	3	2	3	8
centripetal	5	4	6	15
cesium	1	1		2
chipboard			1	1
choke coil	8	9		17
chromatic aberration	10	6	3	19
chromic acid	1			1
chromium	2	1		3
chromosphere	1			1
circulatory		2		2
cirro-cumulus	1			1
cirro-stratus	1			1
cirrus	1	1		2
Clark cell	2			2
claw hammer	1			1
clockspring		1		1
clockwise	25	4	11	40
clothesline	1	1	3	5
coaxial		3		3
cogwheel	2	2		4
cohesive	5	13		18
coil spring			1	1
coinage bronze			1	1
"cold frame"	1			1

"cold light"			1	1
collaborate		2		2
collaboration	3			3
collimator tube	4			4
color-blindness			2	2
commutate		2		2
compensated pendulum			4	4
compound bar	18		34	52
compound disk			3	3
compound-wound generator			2	2
compound-wound motor			6	6
compressible			3	3
compressibility	7	9	1	17
compressional waves		7	13	20
compression pump	11	10		21
compression stroke	6	3	9	18
compressor	9	5	4	18
compressor pump			5	5
concavo-convex	3			3
condensate	1			1
conductance	7	7		14
conductometer	2			2
conning tower			1	1
continuous spectra	5	6		11
contractility		4		4
convection	32	26	39	97
convexity	3			3
convexo-concave	4			4
cookbook			1	1
Coolidge tube	3	2		5
cooperage			1	1
Cooper-Hewitt mercury arc lamp		6		6
copper oxide	2			2
copper oxide rectifier	4			4
copper sulfate	7	5	8	20
corkboard	1			1
Corliss valves	5	1		6
cornstalk			1	1
corpuscular	4	8		12
cosmic ray	8	34		42
cosmic waves			2	2
cotton gin			1	1
Cottrell precipitator	2			2
coulomb	2	5	10	17
counterclockwise	30	2	70	102
countergear		1		1
counterweight			1	1
coziness			1	1
"crack"	1	2		3
crane boom		2		2
crank axle			1	1
crankcase	2		4	6

crankpin	4	1		5
crankshaft	27	10	11	48
critical angle	12	6		18
cross-compound engine		2		2
crosspiece		1		1
cross-section	2	2	2	6
crown glass		3		3
crude oil	2	5		7
cryogenic	2			2
cryolite	3	1		4
crystal detectors	5			5
crystallization		1		1
cubical	1	1		4
cumulo-nimbus	1		2	1
cumulus	1			1
cupric oxide			3	3
cure-all			1	1
curvilinear	7		5	12
cutaway	1			1
cyclone engine	2			2
cyclotron	7			7
Daltonism	3			3
damped waves	7			7
Daniell cell	3	5		8
"darkroom"			1	1
D'Arsonval galvanometer		5		5
Davey safety lamp		3	5	8
daylight-saving time			4	4
"dead"			6	6
dead center	4		4	8
decelerate	2	1		3
deceleration	1			1
decibel	17		1	18
deciliter			2	2
decimeter	2	6	11	19
deflectability		4		4
deformation	2	1		3
"defrost"	1	1	2	4
dehydrate	4		1	5
dekameter		4		4
Delco	1			1
demagnetization	2	2		4
demagnetize	4	6	6	16
demarcation	1			1
denature	1			1
deodorize	1			1
deodorizer		1		1
depolarization			1	1
depolarize			7	7
depolarizer			4	4
destructive distillation	2			2
deuterium		2		2
deuteron	6	5		11

Dewar flask	1	3		4
dew point	4	12	16	32
dextra-rotatory	1			1
dextrose	1			1
diagnostic		1		1
diamagnetic	4	1		5
diathermous	2			2
diathermy		1		1
diatomic	10	8		18
di-chloro-di-fluoro-methane	1			1
Dictaphone	1	2		3
Diesel engine	12	14	20	46
dietician	1	1		2
differential pulley	7	3		10
diffract	10			10
diffraction plane	1			1
digester	1	2		3
diode			1	1
dipping needle	4	7	8	19
direct current	35	34	55	124
directional		3		3
direct lighting	5		3	8
dissemble			1	1
discolorant	5			5
discontinuous		1		1
discontinuous spectra	3			3
dishwater			1	1
dislodgement		1		1
disseminate	1			1
dissociate	6	3		9
dissociation		6		6
distillate		2		2
diving bell	6		3	9
do	6	25		31
doldrums	2			2
doorbell	2	2	7	11
Doppler effect	6	5		11
doubletrees	5			5
downdraft	1			1
downgrade		1		1
downhill	1			1
downstroke	3	4	5	12
downwash	1			1
drawbar		1		1
drawing-room		1		1
dray-horse	1			1
drivepipe		1		1
driveshaft	12	6	4	22
driving rod			1	1
drugstore			1	1
drum-wound armature		8		8
dry cell	18	22	57	97
dry dock	4		4	8

dry farming	1			1
dry ice	1	2	2	5
ductility	6			6
dugout	1			1
dumbbell	1			1
Duralumin	4	2		6
dyestuff	1			1
dynamo-electric	1			1
dynamotor			2	2
dyne	12	20		32
dyne-centimeter	1	2		3
eardrum	1	2		3
earphone	3	6		9
earpiece	2	1		3
ear trumpet	1			1
ebonite	5	3		8
"Ediphone"	1	2		3
Edison cell	12	3		15
Edison effect	3		5	8
edgewise		1		1
effort arm	8	1	8	17
effort distance	13	5	20	38
ejection	2			2
ejector	3			3
electric arc		4		4
electric cell			17	17
"electric eye"	1			1
electric furnace	5			5
electric light bulb	14	21	18	53
electric whirl		5		5
electrification	18	14	5	37
electrochemical	2	2		4
electrocute	1			1
electrodynamics	4			4
electrolimit gauge			1	1
electrolysis	32	12		44
electrolytic	14	2		16
electrolyze	1	1		2
electromagnetic	32	8	32	72
electronic	10	9		19
electron-tube		5		5
electrophorus	7	8	2	17
electroplate	8	8		16
electroscope	40	39		79
electrostatic	2	11	29	50
elvinar	8			8
emergent		5	1	6
emery wheel	17			17
empirically	1	1		2
"en mesh"	5			5
equate		2		2
equilibrant	23	7		30
erg	18	22		40

escapement	1	3	1	5
escapement wheel	2			2
ethyl chloride		1		1
ethylene glycol	2	1		3
Eureka	2	2		4
evaluation			1	1
excitation		1		1
exciter	3			3
exemplify	5			5
exhaust pump	7	3	3	13
exhaust stroke	6	1	4	11
exhaust tube			1	1
exhaust valve		1	6	7
exonerate	1			1
expansibility	3	10		13
experimenter		2	2	4
external-combustion engine	3	1		4
extranuclear		2		2
eyeglasses		1	3	4
eyepiece	11	21	10	42
eyestrain	1	2	5	8
fa	2			2
facsimile	1			1
factor of safety	8			8
factual			1	1
faker			1	1
farad	7	2	7	16
farsighted		3	3	6
fatalism	1	1		2
fathometer		1		1
Fernico	2	1		3
ferrous	1		2	3
ferryboat	1		1	2
ferryboat slip			1	1
field coil			7	7
fields of force	5	4		9
filament circuit	2			2
filling station	4			4
filtrate		1		1
finder			1	1
fingerprint			2	2
firebox	3	1	1	5
firebrick	1			1
firecracker		2	1	3
fixed condenser	1		4	5
flagmen			1	1
flammable	1			1
flashlight	3	3	15	21
flatiron	3	3	4	10
flexlinum		1		1
Fleming valve		9		9
flexion	2			2
flint glass		2		2

Floodlight	6	2	2	10
flotation	10	2	9	21
fluidity	1			1
fluoresce	7			7
fluorescence	16	5		21
fluoroscope	7	1		8
fluorine		2		2
focal distance			4	4
focal length	63	55	37	155
focal plane		5		5
focal point		4	22	26
"follow through"			4	4
foolproof	1			1
foot-candle	30	21	37	88
foot-candle meter		4		4
footnote		3		3
foot-pound	36	20	45	101
foot-poundal	10			10
foot-pound second	3			3
foot-ton	1	1		2
force cup			2	2
force line			4	4
force-pump	8	6	11	25
forecastle	1			1
Foucault currents		4		4
fountain pen	2		1	3
fractional distillation	6	3		9
fractionating column	3			3
Franklin stove			1	1
Fraunhofer lines	4	5		9
frictional electricity	1			1
frontispiece	2			2
fuller's earth	1			1
fuselage	2			2
fusible		2		2
galley proof	1			1
galvanic cell	1	37		38
galvanometer	42	38	85	175
galvanoscope	5			5
gamma rays	8	10		18
gang plank	1			1
gas-cock	2			2
gas engine	35	16	8	59
gas mask	4			4
gas oil		1		1
gasoline engine	8	5	33	46
gasoline torch			1	1
gas refrigerator			1	1
gauge blocks			6	6
gauss	2	1		3
gear ratio	5			5
gearshift	9	4		13
gearwheels	16	4		20

Geissler tubes	3			3
geodetic	1		1	2
German silver	6	12	9	27
getter tab	1			1
ginger ale			1	1
golf course			1	1
gooseneck		2		2
grain alcohol	1	1	1	3
gram-centimeter	10	21	11	42
gram-meter	3	10		13
granular		5		5
graphically	8	5	1	14
grating	4	6		10
gravitate		1		1
grid-circuit	6			6
Guericke's hemispheres		1		1
guinea pigs	1			1
gunfire	1			1
gutta-percha	2	1		3
gyro	1	2		3
gyrocompass	4	8		12
gyroscope	8			8
hack-saw			3	3
hailstorm			1	1
haircut			1	1
hairpin		1		1
hairspring	1		2	3
halftones	2	1	4	7
Hammond organ	4	2		6
handbook			1	1
hand pump			1	1
harmonica	1			1
haywire			1	1
healthbelt			1	1
heat of condensation		1		1
heat of evaporation	11		1	12
heat of fusion	8	13	5	26
heat of solidification	6			6
heat of vaporization	5	7	4	16
heavy hydrogen		2		2
hectometer		3		3
helical	1	1		2
heliograph			3	3
helix	14	22		36
Helmholtz resonator		1		1
henry	6	2		8
Hertzian waves	5	4		9
heterodyne		1		1
Heusler alloys		3		3
high-frequency current			7	7
high tension wires			2	2
hoisting derrick	1		2	3
"hook"	1		1	2

hook-up	1			1
horsepower-hour		1		1
"horse latitudes"	1			1
household balance			3	3
humidifier		1		1
humidify	4	2	5	11
hummingbird		1		1
hydraulic brakes	5	2		7
hydraulic elevator	2	1		3
hydraulic hoist	5			5
hydraulic jack	2			2
hydraulic lift		3		3
hydraulic press	20	14		34
hydraulic ram		3	6	9
hydrochloric acid	5	4		9
hydro-electric	5	7		12
hydrogen chloride	8			8
hydroplane	3	1		4
hydrostatic	4			4
hygrodeik	3	2		5
hygrometer		8	13	21
hygrometry	1	3		4
"hypo"	1			1
hypostatic		11		11
icebox			1	1
Iconoscope tube	3			3
ignition circuit			1	1
ignition stroke	4			4
illuminating gas		5	4	9
immiscible	2			2
impedance	11	6		17
impenetrability			1	1
impound			1	1
incandescence	19	20	7	46
incident ray	14	12	1	27
inclined plane	22	16	21	59
incoming		1		1
incompressibility	1	2		3
incrust	1			1
indestructibility			2	2
index of refraction	31	11		42
indices	2			2
indirect lighting	9	1	4	14
induced current			18	18
inductance	12	10	16	38
inductance coil	3			3
induction coil	27	22	20	69
induction motor	6	13		19
inertia stand	2			2
infra-red	5	9	1	15
inhere		1		1
injection stroke			1	1
injector			8	8

input	9	6	5	20
inset		1		1
Insulite		1		1
intake manifold			2	2
intake stroke	3	3	8	14
intake valve		1	5	6
intensification		2		2
interact	1	1		2
interaction			2	2
interchangeability	1			1
interference bands			6	6
intermittent current		1		1
intermittent siphon	2	4	4	10
intermolecular	1	1		2
internal combustion engine	6	8	3	17
interrelate			2	2
interrupter		1	3	4
interstellar	1			1
invar	6	2	11	19
inversely	7	3	4	14
ion	33	43	1	77
ionization	5			5
ionize	6	12		18
ionosphere		1		1
iridium		1	3	4
iron ore	1			1
iron oxide	1		2	3
isobar	5		3	8
isoclinic	3	5		8
isogonic	6	7	1	14
isotope		6		6
jackscrew	7	8	2	17
Joly photometer	3			3
joule	7	5		12
J-tube			3	3
Kelvinator		1		1
Kennelly-Heaviside layer		6		6
kilocycle	5	2	4	11
kilogram-calorie			9	9
kilogram-meter	8	10		18
kiloliter			1	1
kilowatt-hour	22	14	45	81
kindling	2		1	3
kindling point			2	2
kinescope	2			2
"knock"		1	1	2
Kodachrome	3			3
lactometer	4		3	7
laminae		2		2
laminated	2	6		8
lampblack	1	2		3
lamp shade	3			3
lampwick		1		1

landslides	1			1
lardpress		3		3
latent heat			2	2
Lauritsen		2		2
lawnmower		2		2
lead dioxide	6			6
lead monoxide	2			2
lead peroxide	1	4	1	6
lead storage battery	11	7	9	27
lead sulfate	2			2
legibility	2	1		3
letter press	4		1	5
levo-rotary	1			1
levulose	1			1
Leyden jar	8	16	23	47
life preserver			1	1
lift pump	10	4	12	26
ligamentous	1			1
light bulb			4	4
lignum vitae	1			1
lines of force	85	58	50	193
linotype	1		1	2
litharge	1			1
lithium		4		4
lithium chloride		1		1
lithium hydroxide		1		1
lithography			1	1
lithopone	1	1		2
"local oscillator"		2		2
lodestone	7		12	19
Lodge's resonance jars			2	2
longitudinal waves	4	10		14
long-waves		3		3
"looming"			2	2
"Loop-the-Loop"			1	1
loud-speaker	7	19	6	32
"Low"			6	6
lucite			1	1
luxen	9	14		23
Luxfer prism glass		1		1
macroscopic		2		2
Magdeburg hemispheres	5	5	7	17
magenta	1	2		3
magnetic belts			7	7
magnetic compass	1			1
magnetic equator		4	3	7
magnetic field	46	79	73	198
magnetic meridians	2			2
magnetic poles	12	6	18	36
magnetite	5	2	10	17
magnetization	7	10	5	22
magnification	2	5	6	13
mail-order			2	2

malleability	6			6
manganese dioxide	4	2		6
manganin	2			2
manometer	11	4	5	20
manometric flame	5	8		13
manual training			1	1
Mazda bulb			1	1
mechanical advantage	66	36	28	130
mechanical equivalent	2	11	9	22
megacycle		1		1
megohms	1			1
meniscus	7	3		10
meniscus lens	11			11
mercury-arc rectifier			1	1
mercury-vapor lamp			1	1
metallize		1		1
metallurgy	1			1
meteorite		1		1
meter stick	8	3	33	44
methyl chloride	2		1	3
metronome		7	4	11
mi	5	8	1	14
micro-analysis	1			1
micro-balance	1			1
microfarad	3	2	6	11
micro-henry	2			2
microphone	17	36	2	55
mid-point			1	1
midwestern		1		1
mil	15	7		22
mil-foot		4		4
milhenry	3			3
milliammeter			15	15
milliamperes		1	1	2
milligram	2	2	3	7
milli-henry	1			1
Millikan rays	3			3
milliliter			2	2
millionth	16	61	26	103
mirror galvanometer	1			1
miscible	3			3
modulator	5	2		7
molecular	35	65	11	111
molybdenum	1			1
momentarily	2	4		6
monochromatic	4	6	7	17
monoplane	1			1
Mormon	1			1
Morse code	5	1	3	9
moth balls	1	3	4	8
motion pictures	23	28	16	67
motor generator	4	5		9
mount support	1			1

mouthorgan		1		1
multipolar alternator		2		2
murex			1	1
nacelle	1			1
naphthalene	1	2		3
natural gas			2	2
nearsighted	2	2	2	6
nearsightedness	4	4	5	13
needle valve	2		8	10
neon	27	12	3	42
neutralization			1	1
neutron	9	29	3	41
nichrome	9	4	14	27
nickel hydrate	1		2	3
nickel-iron-alkaline cell			8	8
nickel-iron-caustic potash storage cell		2		2
nickel oxide	1			1
nickel peroxide		1		1
nimbo stratus	1			1
"Nipkow" generator		1		1
nitro-cellulose	2			2
nitrous oxide			1	1
nosepiece			1	1
"Novalux"		1		1
nutcracker	2			2
oboe		2		2
observational	1			1
octagonal	5			5
octal base	1			1
octane	3			3
octant	2			2
ohmic		1		1
oilcan	1			1
olla	1			1
Olympic races			3	3
oncoming	1		2	3
opalescent	1		1	2
opera glasses		7	1	8
ophthalmoscope	2	1		3
ordinate	4			4
organ grinder			1	1
orthophonic	1			1
oscillator	3			3
oscillatory	5	8	2	15
oscillatory-discharge			6	6
oscillograph	12	3		15
osmotic	3			3
outboard motor		1		1
outfielder	1			1
overflow can		2	8	10
overheat		2	3	5
ozone		1		1

pan-scales			1	1
paraboloid	1	1	2	4
parabolic mirror	5			5
parcel post			1	1
Pascal vases	2			2
pedagogical	1	1		2
peephole	1			1
Felton water wheel	4	5		9
pendulum bob	8	2	7	17
pennyweight	1			1
penstock	3	2		5
pentode		4	1	5
pentode tube	3			3
penumbra	9	4	9	22
percussion		1	2	3
periscope	5	4	10	19
permalloy	8		3	11
perpetual-motion	3	7	5	15
perspicacity	1			1
petroleum coke		1		1
"petticoat insulator"	4			4
phonodeik	5			5
photoelectric	22	38	14	74
photoelectrons		3		3
photometer	8	3	10	21
photometry	4	2		6
photomicrograph	2			2
photon	15	45	3	63
photonic	2			2
photosphere	1			1
pi		2		2
piccolo	1	2		3
pig iron		1		1
pile-driver	1	5	5	11
ping pong			4	4
pinhead	1		1	2
pinion gear	11		1	12
pinion shaft	4			4
pin-wheel	1	1		2
pipe organ	3	4		7
pipette	6	1		7
pitchblende		4		4
pith ball	12	12	10	34
pivot stand			2	2
planetarium	1			1
plano-concave	4			4
plano-convex	4	1		5
plate-circuit	7		6	13
plate current			5	5
plate glass			3	3
platform balance	1		15	16
platinum iridium	1	2		3

platinum resistance thermo-				
meter	1		1	2
"plumber's friend"			1	1
plumb bob			1	1
plumb line	9	1	2	12
polariscope	4			4
polarity	26	2	35	65
polarization	8	8	8	24
polaroid	11			11
polychromatic	6			6
polygon		1		1
popgun			3	3
portability			1	1
positron	4	2		6
potassium cyanide		1		1
potassium dichromate	2		1	3
potassium hydroxide	2		3	5
potassium nitrate		1		1
potassium permanganate			3	3
potentiometer			1	1
potter's slip			1	1
poundal	8			8
powerhouse	2	2	3	7
powerstroke	9		13	22
preheat	1			1
pressure cooker	5	5	11	21
pressure gauge	3		11	14
pressure pump			3	3
"Prestone"	1	2		3
preview	6			6
primary cell	2	4		6
primary coil	34	29	23	86
principal axis		3		3
principal focus	37	20	4	61
printing press		1		1
prism binoculars		6	4	10
projection lantern		8	3	11
proof plane	8	4		12
propellor shaft	9	1	2	12
proportionality	2	1	7	10
protractor	3		3	6
psychrometer	1	2	1	4
pulpboard		2		2
pycnometer	5			5
pyralin	1			1
pyrex	9	1	2	12
pyrometer			1	1
quackery			1	1
quadruple-expansion engine		1		1
quadruplex		1		1
quantum			1	1
quantum theory	4			4
radioactive	2	9		11

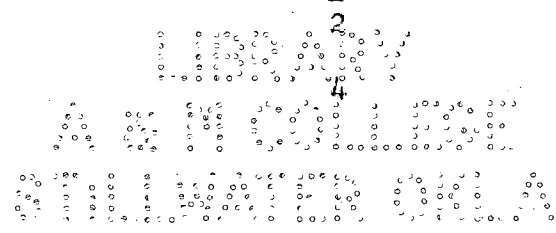
radioactivity	8	18		26
radio compass	7			7
radio-frequency	18	8		26
radiograph	4			4
radiometer	4	4	11	19
radio-telephone		1		1
radio-variable condenser			2	2
radium bromide	5			5
radius of curvature	4			4
radon	4			4
range-finder	1		1	2
rarefaction	12	10	5	27
rarefy	3	1	2	6
ratchet wheel	2		1	3
rayon	2			2
re	4	3		7
reactance	12			12
real image	24	18	21	63
reamed			5	5
recharge		2	1	3
recheck			1	1
recombination		1		1
rectifier	10	10	7	27
rectifying tube			2	2
rectilinear	9		4	13
redirect	1			1
red lead oxide	2			2
reflector	11	9	24	44
refracting telescope			5	5
refractive	11			11
refractometer	2			2
refractor		1		1
refreeze			1	1
refrigerant			5	5
refuel	1			1
regelation	6	3	3	12
regulator		1	1	2
reinvert		4		4
relative humidity	30	21	37	88
relativity	1	2		3
repeaters			1	1
reproducer	2			2
reproducible		1		1
resistance arm	7	2	5	14
resistance box	15			15
resistance distance			37	37
resistance furnace	6			6
resistor	3			3
resonate		1	8	9
resonator	6	8		14
restate		1		1
retardation	1	2		3
retentivity	5	8	3	16

rhodium	1			1
ring stand			22	22
ring-type armature		2		2
ring-wound	6			6
riveting hammer			2	2
rock wool	4		3	7
Roentgen rays	2	2		4
roller bearing			1	1
rolled lock	1			1
roly-poly			2	2
rotary converter	5			5
rotary rock drill			3	3
rotator			4	4
rotogravure			1	1
rotor	30	26	4	60
rubidium	2			2
Rueprecht balance	1			1
Rumford photometer	1	2		3
saccharimeter	2			2
safety valve			5	5
sal ammonia	3	1	3	7
sandblast	1		1	2
sandbox	1			1
Savart's wheel			2	2
scale pan			3	3
scanner	1			1
schematic	1	1		2
schoolbooks			1	1
Scotch-Canadian			1	1
screen-grid	5	5	1	11
screw driver	6	1	2	9
seaplanes	2			2
secondary cell	3	3		6
secondary coil	43	33	30	96
secondary foci	3	3		6
selectivity	3	1		4
self-exciting	11	2		13
self-inductance			4	4
self-induction	10	9	2	21
self-luminous	2			2
self-recording	1			1
self-registering	1			1
self-starter	4		2	6
semi-automatic		1		1
semi-conductor	2			2
semi-darkness			1	1
semi-Diesel engine	5	5		10
semi-direct			8	8
semi-indirect	6			6
semi-tone	3			3
semi-yearly			1	1
sensitize	1			1
series coil	1			1

series motor		1		1
series-parallel	1			1
series wound	14	8		22
series wound generator			3	3
series wound motor			7	7
set-up			5	5
sewing machine	7	1	3	11
sextette	2			2
sextillion		1	2	3
shins		1		1
shiplays		1		1
shock-absorber	1			1
shoe-sale			1	1
shoring			4	4
short-circuit	12	4	8	24
shortstop	1			1
short-wave		9		9
"shrunk"			1	1
shunt coil	1			1
shunt-wound	13	4		17
shunt-wound generator			3	3
shunt-wound motor			7	7
shut-off valve	1			1
silver cyanide		2		2
silver nitrate		2		2
single-stroke	1			1
skiagraphs	2			2
"sky-light"			1	1
sledge hammer			1	1
"slice"	1		1	2
slider			4	4
slide valve		2	7	9
slurry cake			1	1
smokebox		2		2
smokestack	4	3		7
snakewood			1	1
snowdrift		1		1
snowshoes	2	3		5
soapsuds	1			1
soccer			1	1
soda straw			1	1
sodium bicarbonate			1	1
sodium chloride	2	2	2	6
sodium hydroxide	2			2
sodium vapor lamp		6		6
solenoid	4	7		11
solidification	13	4	1	18
solubility	5			5
solute	6			6
sonometer	5	6		11
sounding box			5	5
soundproof			2	2
sound track			8	8

southeasterly	1			1
southwesterly	1			1
spall	1			1
spark coil	5		11	16
spark gap			2	2
spark plug	4	6	14	24
specific density	5			5
specific gravity	4	56	72	132
specific heat	39	25		64
specific resistance		5		5
specific volume	4			4
specific weight	79			79
spectrometer		2		2
spermaceti			2	2
spherical aberration	14	5	3	22
spherical photometer	2			2
spherometer	4			4
spinneret	1			1
spinning wheel			1	1
spintharoscope	3	6		9
spiral nebulae		4		4
spitcock	1			1
split-ring commutator			1	1
spotlight	1	4	1	6
spring balance	12	19	36	67
spring board			1	1
sprinter	1			1
square-root		1		1
squirrel-cage rotor	3	5		8
stabilizer	7			7
standard-time			7	7
standpipe	7	5	2	14
statical		1		1
static electricity	23	16	16	55
static machine		11		11
stationary coil			1	1
stator	11	8		19
steam chest	3			3
steam engine	25	26	45	96
steam pipes	4			4
steatite	1			1
steering gear			1	1
step-down-transformer	7	8	8	23
step-up-transformer	6	7	4	17
stereopticon	1	2		3
stereoscopic		1		1
stethoscope	5			5
St. Louis motor			3	3
"stop"			2	2
stopcock	19	2	3	24
stop watch			3	3
storage batteries		25	44	69
storage cells	44			44

stratosphere	10	8	7	1
stratus	1			1
streamline	12	6		18
street car	10	8		18
strontium chloride		1		1
stylus	5	1		6
subdominant chord	1	1		2
sublimation	4	4		8
submultiple	1	2		3
subscript		1		1
subtended	1			1
subtractive			1	1
suction cup			3	3
suction pump	2		2	4
"suction stroke"		1		1
sulfation	2			2
sulfur dioxide	2		3	5
sun lamp	1			1
sun-ray			2	2
superaudible		1		1
supercede	2			2
supercharge	2	1	3	6
superheat		1		1
superheterodyne		5		5
supersaturate	1	1		2
supersound	1			1
support collar	1			1
supposedly			1	1
suppressor	1			1
surface tension	7	2		9
"sweat"			2	2
switchback	1			1
synchronesh	8	2		10
synchronism		2		2
synchronize	3	1	1	5
tachometer	2		2	4
tailrace		2		2
tantalum		1		1
tartaric acid	1			1
teeterboard	1	1		2
telegraphic	1	2		3
telegraph sounder			2	2
telegraphy		12		12
telephonic		1	1	2
telephony	3	12		15
teletype	3			3
television	13	4		17
tensile strength	13	1	10	24
tensional	2			2
"terella"	1			1
terrain	2			2
"terrain clearance indicator"	4			4



terrestrial magnetism	4	1		5
test tube	1	10	5	16
tetrode			1	1
theretofore		1		1
therm		3		3
thermionic		5		5
thermo-couple	1			1
thermograph	2			2
thermometry		14		14
thermos bottle	6	5	6	17
thermoscope	1	1		2
thermostat	7	6	31	44
"The Whip"			1	1
thistle tube	1	1	2	4
thorium	1	7		8
thunderclap		1		1
tickler coil		1		1
tie-up			1	1
tightrope	1	9	1	11
timekeeping		1		1
timer	3		3	6
timing gear	1	1		2
tin can			2	2
tinner	3	1		4
tissue paper			5	5
tonic chord	1			1
tooth contact			1	1
torque	4	1		5
Torricellian apparatus	10			10
Torricellian barometer			1	1
Torricellian tubes		2		2
torsion	2	1	7	10
tourmaline	8	6		14
traceable		1		1
track-meet	1			1
tractive		3		3
tramp iron			2	2
transit instruments	1			1
translatory	1			1
transoceanic		3		3
transpacific		1		1
transpute			1	1
trigonometry	3	1		4
trillionth		1		1
"Triode"		4	1	5
triple-expansion engine		1		1
trip scale	1			1
trireme		1		1
troposphere	3			3
"trouble shooting"			1	1
Trylon	1			1
T-tube			5	5
tupa		1		1
tuner	2			2

tungar rectifier	5	8		13
tuning fork	7	22	22	51
turbogenerator	2	3		5
turnbuckle	4	1		5
turntable	1			1
"twister"	1			1
typesetting			1	1
ultramicroscope	5			5
ultrasonic	4			4
ultraspeed			1	1
umbra	9	6	8	23
underlay		1		1
underload	8			8
undersea		1		1
undershot	1	3		4
underslung	5			5
undersurface	2	1		3
underwater		2		2
underweight		1		1
uni-directional	6	4		10
universal motor	1	1		2
upgrade		1		1
upheaval		1		1
upstroke	6	3	4	13
uranium	15	25		40
uranium oxide		1		1
U-tube	2	9		11
vacuum bottle		2		2
vacuum cleaner	6	3	15	24
vacuum pan	3			3
vacuum pump		1	2	3
vacuum tube	10	23	8	41
valve stem	4			4
vanadium	1			1
vaporization	5	5		10
vaporizer	1			1
vapor lamp	11			11
variable radio condenser	6	3	1	10
vehicular			1	1
velocity ratio			28	28
venturi	4	2	1	7
verification	1	2		3
vernier	2	2		4
vibratory	1	1		2
vibrograph	4			4
"virtual" image	18	19	21	58
viscosity	7			7
visibility			1	1
volatilize		1		1
voltaic cell	54	5	5	64
volt-ampere	2			2
voltmeter-ammeter	3		4	7
vulcanite	15			15

waffle iron	1		3	4
wallboard			1	1
wallpaper	1		1	2
wartime	1		1	2
washing machine	2	1	8	11
wastebasket	1			1
water gauge			3	3
water hammer	1			1
waterhead		1		1
water-jet pump			2	2
wattage	2	2	2	6
watt-hour	11	2	2	15
watt-hour meter	5	6	5	16
wattmeter	5	1	10	16
wave length	28	93	28	149
wave train		18	5	23
Weston cell	2	6		8
Weston milliammeter		1		1
Weston photometer			3	3
Wheatstone bridge	8	1		9
wheel and axle	24	4	19	47
whispering galleries	2	1	9	12
white hot			1	1
white lead			5	5
whiting		1		1
Wilson cloud chamber	5	10		15
Wimshurst machine		7		7
windage	1			1
window-casing			1	1
windowpane		1		1
windshield wiper			3	3
wind tunnel	2			2
wingfoil	1			1
wintertime	1	2		3
wirephoto		2		2
wood alcohol	1		1	2
worm drive	1		2	3
worm gear	7	6	1	14
yardstick			4	4
Y-connection			3	3
Y-tube			2	2
zeppelin	2			2
zinc chloride	2	1	1	4
zinc sulfide	3	2		5
"Zonolith"	2			2

Table IV

UNCOMMON WORDS IN CHEMISTRY

WORD	BLACK CONANT	HOPKINS	HORTON	TOTAL
abnormality		1		1
abrasion			1	1
abrasive	6	3	3	12
absolute temperature	17	29		46
acetaldehyde	1	14		15
Acetate process		1		1
acetic acid	20	26	17	83
acetic anhydride		1	1	2
acetone		19	5	24
acidic	5	1		6
acidify	1			1
acidosis		2		2
acidulate	1		1	2
acrolein			1	1
actinium		2		2
activate	2	9		11
adrenal			2	2
adrenalin	1	1	1	3
adsorb	5	24	4	33
adsorption	7	10	3	20
adulterant		2	5	7
aeration			2	2
aeronautical	1			1
African Sleeping Sickness		1		1
aftereffects		1		1
afterglow			1	1
agar		1	1	2
airbrush		3		3
air conditioning	7	1		8
"air slaked"	6	2		8
alabamine		4		4
aldehyde	7	19	1	27
algebraic	3			3
alizarin	6	4	1	11
alkaline earths	6			6
alkalinity	1			1
alkyl		3		3
Allegheny metal		1		1
allergy		7		7
allotrope	23	30	8	61
allotropism	1			1
allotropy	3			3
Alnico		1		1
alpha iron		2		2
alpha ray		23		23

alternating current	1			1
alumina	4	2		6
aluminate	4			4
aluminate of cobalt		1		1
aluminum acetate		1		1
aluminum acid silicate		1		1
aluminum bronze	1	1		2
aluminum carbonate		3		3
aluminum chloride	3	7	2	12
aluminum fluoride	1			1
aluminum hydroxide	14	15	7	36
aluminum nitrate		1		1
aluminum nitride	1			1
aluminum oxide		28	5	33
aluminum phosphate	1			1
aluminum silicate	9	3	1	13
aluminum sulfate	4	7	4	15
aluminum sulfide	3	1		4
alundum	2			2
Amalgamation process		5		5
American process		1		1
amine		6	2	8
amino acetic acid		2		2
amino acid	3	26	2	31
ammeter	3			3
ammeter		1		1
ammoniacal	3	1		4
ammonia fountain		2		2
Ammonia oxidation process		5		5
ammonia water		2		2
ammonium alum	2			2
ammonium bicarbonate	1	1		2
ammonium bifluoride		1		1
ammonium bromide		1		1
ammonium carbonate	1	1	1	3
ammonium chloride	22	27	9	58
ammonium cyanate	1	1		2
ammonium ferric citrate	1			1
ammonium hydrate	1			1
ammonium hydrogen carbonate		1		1
ammonium hydroxide	40	35	26	101
ammonium molybdate		1	1	2
ammonium nitrate	8	9	1	18
ammonium nitrite	4	11		15
ammonium phosphate			1	1
ammonium phosphomolybdate		1		1
ammonium sulfate	10	22	7	39
ammonium sulfide	2	1		3
anaphoteric	3	8	3	14
amyl acetate		1	3	4
amyl alcohol	3	1		4
amyl chloride		1		1
amylopsin		2	1	3

amyl valerate		1		1
anabolism			2	2
anaesthesia	2	4		6
analyst		1		1
angstrom	3			3
anhydride	18	24	9	51
anhydrite			2	2
anhydrous	9	14	12	35
aniline	2	3	3	8
"animal starch"		1		1
anion		1		1
anode	28	28	27	83
anthracene	2	1		3
anthraquinone	1	1		2
antichlor		3	3	6
antifreeze	4	13		17
antifriction	1	1		2
antiknock	6	2		8
antimonic acid	1			1
antimony black	1			1
antimony chloride	1			1
antimony pentisulfide			7	7
antimony sulfide	4	3		7
antimony trichloride		1		1
antimony trioxide	2			2
antimony trisulfide	1			1
apatite	2			2
aqua ammonia	5			5
aquadag	3	4		7
aqua fortis	3	3	2	8
aqua pura	1			1
aqua regia	21	7	5	33
aqueous tension	4			4
arc furnace		4		4
arc lamp	2	1		3
arc process		9		9
argentum	1			1
argyrol	2		1	3
army worms		1		1
arrowroot			2	2
arsenic acid	1	1		2
arsenic chloride		1		1
arsenic trioxide	3	6		9
arsenide		1		1
arsphenamine		3		3
"art gum"		1		1
asphaltum			2	2
aspirate	1			1
atomize	1	1		2
aurum	1			1
automotive		1		1
azote		1		1
babbitt	3	2	1	6

"bad-luck"		1		1
bakelite	4	7		11
baking powder	7	11		18
baking soda	5	12		17
balance-pan	1			1
balkite rectifier		1		1
ball-clay		1		1
bank vaults		1		1
barite	2			2
barium chlorate	1		1	2
barium chloride	17	10	12	41
barium hydroxide	4	4		8
barium nitrate		3	4	7
barium oxide		1		1
barium peroxide	2		1	3
barium phosphate		1		1
barium silicate	1			1
barium sulfate	13	17	2	32
barium sulfide	1		2	3
barometric	1	5		6
barytes	1			1
baseboard		1		1
basic nitrate	1		1	2
batting	1			1
bauxite	2	6	1	9
bearing metal		2	1	3
bedbug			3	3
bedrock	3			3
beshive oven		4	2	6
beet sugar	3	2		5
"bell and hopper"			3	3
bell jar	4		8	12
bell metal		1		1
bemberg		1		1
Benedict's solution		1		1
benzene ring		4		4
benzidine	1	1		2
benzine		19	10	29
benzoic acid	1	2	5	8
benzo-purpurin			1	1
benzosulphined			2	2
Bergus process			2	2
beriberi	2	2	1	5
beryllium	4	8	1	13
Bessemer Converter	9	10		19
Bessemer process	12	12		24
beta	11	1	3	15
beta iron		2		2
beta naphthol		1		1
beta ray		12		12
binary	9	10		19
"bird's-eye"			1	1
biscuit firing		2		2

biscuit ware		2		2
Bismarck brown			1	1
bismuth nitrate	1			1
bismuth subnitrate	1			1
bismuth trioxide	1			1
bisulfate	2	1		3
bisulfite	10			10
Biuret test		2		2
bivalent	13			13
blackish	1			1
black lead	2			2
Black Leaf # 40		1	1	2
"blast"		7	16	23
blast furnace	26	35		61
"blasting gelatin"		1		1
blast lamp	5			5
bleaching powder	6	1		7
blister copper	4			4
blister steel	3			3
"blooms"		1		1
"blow holes"		2		2
blow torch	3		1	4
blue print	8	8		16
bluestone	2	1		3
blue vitriol	5	3		8
blue water gas		1		1
bluing	2	1		3
boiler scale	3	6		9
boll weevil		1		1
bomb calorimeter	1	2		3
bond formula		3		3
bone black	4	8	4	16
bone meal		1	2	3
boracic acid		2	1	3
Bordeaux mixture	3	4	2	9
boric acid		5	10	15
boron	6	6	4	16
boron trioxide		4		4
borosilicate	1			1
borromite		1		1
Bouillon cubes		1		1
"bow legs"		1		1
breadmaking		1		1
Bredig's arc		1		1
bricquettes		1	2	3
bright-line spectra	1			1
British Thermal Unit	7	8		15
broccoli		1		1
bromate		1		1
bromic acid		1		1
bromine	55	69	14	138
Brownian movement	7	7		14

"buckles"	3	4		7
"bumping"			1	1
bunkers			1	1
Bunsen burner	15	18	20	53
Bunsen spectroscop	4			4
Bunsen valve	1			1
burette	5			5
Burnt sienna		1		1
Burnt umber		1		1
butane	2	16		18
butterfat	2	4		6
butternut		1		1
butter of antimony		1		1
butyl		1		1
butyl acetate		1		1
butyl alcohol	2	3		5
butyl chloride		1		1
butyl proprionate		1		1
butyl tartrate		1		1
butyric acid		7		7
butryn		1		1
cabbage worm		1		1
cadmium	2	12	1	15
cadmium sulfide		2		2
cadmium yellow		1		1
caesium	1			1
caisson	1			1
calcination		3	8	11
calcite	5	2	2	9
calcium acetate	1	2		3
calcium acid phosphate	2			2
calcium acid sulfite	1			1
calcium aluminate		1		1
calcium arsenate		3		3
calcium bicarbonate	6	1	1	8
calcium bisulfide			1	1
calcium bisulfite	2	1	1	4
calcium bromide	2			2
calcium carbide	13	1	5	19
calcium carbonate	38	27	14	79
calcium chloride	19	30	2	51
calcium cyanamide	5	8	2	15
calcium cyanide	2			2
calcium dihydrogen phosphate	1			1
calcium fluoride	5	5		10
calcium hydrogen carbonate		2		2
calcium hydrogen phosphate		1		1
calcium hydrogen sulfate		1		1
calcium hydrogen sulfite		2		2
calcium hydroxide	46	30	8	84
calcium hypochlorite	3			3
calcium iodide		1		1
calcium nitrate		2		2

calcium nitride		1		1
calcium oxide	15	16		31
calcium oxychloride		1		1
calcium phosphate	10	9	1	20
calcium phosphide	5			5
calcium silicate	9	3		12
calcium sulfate	8	18	3	29
calcium sulfide		1		1
calcium superphosphate		2		2
calcium zeolite		1		1
"caliche"	1	1		2
calorific		2		2
calx	1		7	8
cane sugar	10	2		12
cannel			2	2
capric acid		1		1
caproic acid		1		1
caprylic acid		1		1
Caput Mortuum		1	1	2
carbide	1	2	6	9
carbogen	2			2
carbolic acid	2	6	3	11
carboly	3	1		4
carbona	1	2		3
carbonaceous		1		1
carbon bisulfide	27		3	30
carbon black	2			2
carbon cycle		1		1
carbon dioxide	204	227	93	524
carbon dioxide cycle		2		2
carbon disulfide	5	13	4	22
carbonic acid	23	12	2	38
carbonization		1		1
carbonize			1	1
carbon monoxide	79	63	35	177
carbon silicide	3			3
carbon tetrachloride	16	9	13	38
carborundum	12	5	5	22
carboxyl		4	2	6
carboy	1			1
carbureting			1	1
car load	2			2
carnalite	1			1
carotene		3		3
carron oil		2	1	3
Carter Process		4		4
carton		1		1
case hardening	3			3
casinghead gasoline	1	4		5
cassava			1	1
cassiterite		1		1
catalysis		1		1
catalyst	47	170	41	258

catalytic	12	95		107
catalytically		1		1
catalyze	1			1
cathode	35	34	38	107
cathode ray		3		3
cation		1		1
caustic lime		1		1
caustic potash	5	2	1	8
caustic soda	18	16	23	57
caustic soda process		6		6
caustite	1			1
celanese		1	4	5
cellophane	4	14	3	21
cellulose acetate		5	3	8
cellulose hydrate		1		1
cellulose nitrate	4	5	13	22
cellulose xanthate	2	1		3
Celotex		1	1	2
cementation process	2			2
cementite	2		6	8
centiliter		1		1
ceramics		3		3
ceresin		1		1
cerium	5	2	1	8
cerium oxide		2		2
cerrusite		1		1
cesium	3	13	1	17
chafing dish		1		1
chalcocite	2	1		3
Chamber process	9	18		27
"chameleon solution"		1		1
charge-cloud	1			1
checker-work			1	1
Chile saltpeter	3	3		6
China clay		2		2
chinaware		1		1
chip board		1		1
chlorate	3	3	3	9
chlorauric acid	4			4
chloric acid		2		2
chloride of lime	2			2
chlorinate		9	2	11
chloroplatinic acid	8	1		9
chloroprene	2			2
chlorous acid		2		2
"choke"		3		3
choke damp	1			1
chromate	6	2		8
chrome alum	3			3
chrome iron ore			1	1
chromel		2		2
chrome steel		2		2
chrome tungsten steel		1		1

chrome vanadium		1		1
chrome yellow		3		3
chromic	3			3
chromic acid	5	1		6
chromic anhydride	5			5
chromic hydroxide	2			2
chromic oxide	4	1		5
chromium	29	39	8	76
chromium oxide	1	1		2
chromium sulfate	1			1
chromium trioxide		1		1
cinnabar	4	4	1	9
citric acid	2	2		4
citrous		5		5
clayware		1		1
clinker	3	5		8
coagulum	2		1	3
coalbin		2		2
coal gas	10	12	10	32
coal oil	1			1
coal tar	14	18	2	34
cobalt blue		1		1
cobalt chloride		1		1
cobalt nitrate		1		1
cobalt oxide		1		1
cobaltous	1			1
cobaltous chloride	3			3
coca		1		1
cochrome		1		1
codliver		4	3	7
coffeepot		1		1
coinage bronze		2		2
coin silver		1		1
coke oven gas		1		1
"cold short"		1		1
colemanite		1		1
collaborate		1		1
collimator	1			1
collodion	6	5	6	17
colloid	36	30	13	79
colloidal	74	194	19	287
collumbium	1	8	1	10
combustibility		1		1
compressible			1	1
compressor	4			4
condensate			1	1
condenser coil		1		1
conductive		1		1
confirmatory			1	1
"conglomerate"			1	1
Congo red	1	5	4	10
coniferous		1		1
Contact process	8	11		19

contort		1		1
convection		2	1	3
converter	1	14		15
cookbook			2	2
Cooper-Hewitt lamp	2			2
copper arsenate		1		1
copperous	3	1		4
copper carbonate		2		2
copper chloride	3	1		4
copper chromate		1		1
copper glance		1		1
copper hydroxide		29	3	32
copper iodide			2	2
copper nitrate	5	5	2	12
copper oxide	30	29	36	95
copper pyrite	1			1
copper sulfate	22	29	35	86
copper sulfide	11	6		17
corn cob			1	1
corn syrup		3		3
cornstarch		3	5	8
corrosion	25	37	2	64
corrosive sublimate	8	2	1	11
corundum	2			2
cosmic ray	1	1		2
cottage cheese		1		1
Cottrell process	5	2	4	11
covalence		6		6
covalent linkage	2			2
"cracking"	7	8	11	26
crank-case	1	2	1	4
crankshaft	1	1		2
cream of tartar	3	6		9
creosol			4	4
cresols		1		1
cretinism			2	2
Crisco	1	2		3
critical range	4			4
critical temperature	5	2		7
crucible process		4		4
crucible steel	3			3
crude oil	7			7
crusher		1		1
"crutching"			2	2
cryolite	6	12	3	21
crystallization	9	20	12	41
crystallography		1		1
crystalloid	3	3		6
crystolite		1		1
cube tray		1		1
cullet		2		2
cupful			1	1
cuprammonium process		1		1
cuprate		1		1

cupric	4	4	1	9
cupric ammonium nitrate	1			1
cupric chloride		1		1
cupric hydroxide	1	1		2
cupric oxide	4	2		6
cupric sulfate	2			2
cupric sulfide	1	1		2
cuprite	3	3		6
cupro-ammonium			1	1
cuprous	5		1	6
cuprous oxide	4	5		9
cuprum	1			1
curative	1	5		6
cutworm		1		1
cyanamide	1	1	8	10
cyanamide process	4			4
cyanide		5		5
cyanide process	2	22		24
daguerrotype		1		1
Dakin's solution	3			3
Davy safety lamp		1		1
"dead"		1		1
deacerate		1		1
decane	1	1		2
decigram		1		1
deciliter		1		1
decimeter		4		4
decolorize	2	5		7
decolorizer		1		1
decrepitation		1		1
deflagrate			1	1
deflagrating spoon			5	5
deflagration	1			1
deflate		1		1
deflection		2		2
deflector		1		1
deflocculate		1		1
"defrost"			3	3
dehydrate	12	4	18	34
dehydration		26		26
Delcasso		1		1
deliquesce			2	2
demagnetize	1			1
denaturant		5		5
denature	9	8	8	25
denitrification		1		1
denitrify	1			1
dentistry		2		2
deodorant		1	4	5
deodorize	1	1		2
deodorizer			1	1
deoxidize	1	1		2
dephlogistated	1			1
"dephlogisticated" air			2	2

depilatory			2	2
depolarize		1		1
desilverization	3			3
dessicator		6	5	11
destructive distillation	12			12
detergent	4	3	4	11
detinned		1		1
detonate	2	3		5
detonation	2		11	13
detonator	1		10	11
deuterium	5	5	4	14
deuterium oxide	1	1		2
deuteron	1			1
developer	1			1
devulcanize	1			1
Dewar flask	3	1		4
dew point		1		1
dextrin		13	8	21
dextrose		12	2	14
diagrammatic	1	1		2
dialysis		5		5
diastase	2	1	4	7
diatomic	1			1
dibasic		5	2	7
dicalcium silicate		1		1
dichloro-diethyl sulfide		1		1
dichloro-difluoro methane		1		1
dichloro-ethane		1		1
dichromate	6			6
Diesel engine		1		1
diethyl carbonate		1		1
diethyl phythalate		1		1
dietician			1	1
diffusible		1		1
diffraction grating	1			1
digester		1		1
dipeptids			1	1
direct current	1			1
direct drying	4			4
Direct ammonia process	2			2
disaccharids		2		2
discharge nozzle		1		1
disperse phase		3		3
dissociate	7	4	1	12
dissociation	24	3		27
distillate	3	9	27	39
dolomite	3	9		12
door bell		1		1
doormat		1		1
"dope"		1		1
"dopey"	1	3		4
douche			1	1
Dow metal	1	2		3

"downcomer"		2		2
Downs process		1		1
"Drano"		3		3
Dreft	2	2	3	7
dressings			1	1
drive shaft		1		1
drugstore			1	1
dry cell	1	8		9
dry cleaners	1			1
dryers	4	5		9
"dry farming"	2			2
dry ice	5	8		13
"drying"		9		9
"drying oils"		1		1
Duco		2	3	5
ductility		3		3
dude		1		1
duodecane			2	2
duprene	3	1		4
Duralumin	4	3		7
duriron		4	1	5
dustcatcher	1			1
Dutch metal		1		1
Dutch process		4		4
dyestuff	2	5	2	9
dysprosium	1	1	1	3
ecru		1		1
eczema		1		1
Edison cell		3		3
effervesce	3	4		7
effervescent	7	4		11
effloresce			5	5
efflorescent	5	4		9
eggshell		1		1
ejection	8			8
eka-aluminum	1			1
elastin		2		2
electric arc	2			2
"electric eye"		5		5
electric furnace	26	18		44
electrochemical	4	4		8
electrolysis	68	66	65	199
electrolytic	11	18	7	36
electrolyze	1	4	2	7
electronegative	2			2
electroplate	3	9		12
electroplater		1		1
electropositive	2	3		5
electroscope	2	10		12
electrostatic	1			1
electrothermal	1			1
Elixir	2	1	3	6
Elodea			1	1

Eisner's reagent		1		1
empirical formula	6	6	1	13
emulsifier		2		2
emulsify	3	1		4
emulsoid	2	1		3
endocrine			4	4
endothermic	6	4		10
end-product	2			2
energetically	1			1
epinephrin			3	3
Epsom salts	5	6	4	15
Epsom springs		1		1
equimolecular	1			1
equivalent weight	6			6
erasure		1		1
erbium	1	1	1	3
erepsin		1	1	2
ergosterol			1	1
ester	8	48	4	60
esterification		3		3
ethane	5	19	1	25
ethanoic acid		1		1
ethanol	2		9	11
ethene		3		3
ethine		2		2
ethyl	1	7		8
ethyl acetate	5	7		12
ethyl alcohol	27	36		63
ethyl butyrate		1		1
ethyl chloride		6		6
ethyl dibromide		3		3
ethylene	2	25	2	29
ethylene bromide	3	1		4
ethylene chloride		1		1
ethylene dibromide	1			1
ethylene glycol	5	6		11
ethyl ether	3	3		6
Ethyl gasoline	8		8	16
ethyl hydroxide		1		1
ethyl lactate		1		1
ethyl oxide	2			2
eucalyptol			1	1
eudiometer	7	9	4	20
Europium	1	1	1	3
evaluate			1	1
evaporating dish		4	10	14
excitation	1			1
excreta			1	1
exothermic	1	4		5
extender	2			2
exterminator		1	2	3
eyepiece	1			1
eye strain			1	1

eye wash		1		1
fabrikoid		4		4
face piece	1			1
factual	1			1
faddist		1		1
farseeing		1		1
fatty acid	7	11	2	20
fatty ester	7	1		8
Fehling's solution	4	3	9	16
feldspar		8	11	19
ferric	30	5	2	37
ferric ammonium citrate		1		1
ferric benzoate			1	1
ferric chloride	19	3	2	24
ferric ferricyanide		1		1
ferric ferrocyanide	2	1		3
ferric hydroxide	9	3		12
ferric nitrate	1			1
ferric oxalate	1			1
ferric oxide	11	8	8	27
ferric sulfate	2	4		6
ferric tannate	3			3
ferricyanide	6			6
ferrite			3	3
ferro-alloys	2			2
ferrochrome		1		1
ferrocyanide	7			7
ferro-manganese	3			3
ferro-silicon	1			1
ferro-titanium	1			1
ferro-tungsten		1		1
ferrous	33	6	2	41
ferrous carbonate		1		1
ferrous chloride	13	2		15
ferrous ferricyanide	2			2
ferrous hydroxide	2			2
ferrous sulfate	5			5
ferrous sulfide	3			3
ferrous tannate	3			3
ferrovanadium		1		1
ferrum	1			1
fiberboard			1	1
fibrinogen		1		1
fibrovascular		1	1	2
"filler"	2	3		5
filtrate	2		15	17
"fine"		5		5
fingernail		1	3	4
fingerprint		2		2
firebox	2	5	2	9
fire brick	1	5	2	8
fireclay	1	3		4
firecracker			3	3
fire damp		1		1

firedoor	1	1		2
fire foam	1	5		6
fire hose		1		1
"firing"		6		6
fishtail burner	2			2
"fixing"		1		1
fizz			1	1
flammable		6		6
flammability		1		1
flashlight	4	6	2	12
flatiron			2	2
flint glass	4			4
flint lock			1	1
"Flit"			2	2
float valve		1		1
flocculate		1		1
flotation	9	10		19
"flowers of sulfur"	2	3		5
fluorapatite		1		1
fluoresce	1			1
fluorescence		7		7
fluorescent	2	2		4
fluoride	3	1	1	5
fluorine	30	52	3	85
fluorite	2			2
fluorspar	1	7		8
"fool's gold"	1	1		2
forgeability	1			1
formic acid	6	1		7
fossil gum	1			1
fountain pen		1		1
fractional distillation	10	13		23
fractionate	4	1		5
Frasch process	3	6	8	17
Fraunhofer Lines	2			2
French process		1		1
Freon		1		1
"frit"		1		1
"fritting"		1		1
frontispiece	2			2
"frost"		3		3
fructose	5	3		8
fruit grower		1		1
fruit sugar		1		1
fuel oil		10		10
"fuming"		1		1
fungicide	3	9	1	13
furfural			2	2
fusel oil			1	1
fusible	4	10		14
gadolinium	1	1	1	3
galactose		1		1
gallic acid			1	1
gallium	3	2	1	6

gamma	8		3	11
gamma iron		2		2
gamma ray		9		9
gangue	5			5
gas black		4		4
"gas carbon"			2	2
gas cock			3	3
gas engine	1			1
gas holder		1		1
gas mask	3			3
gas-mixer		1		1
"gasoline lantern"			1	1
Gay-Lussac Tower	1			1
gel	9	10		19
germanium	1	3	1	5
German silver	5	2		7
germicide	2	1	16	19
ginger ale	2			2
glacial acetic acid	2			2
glacial drift		1		1
Glauber's salt		1	6	7
Glover Tower	2	5		7
glycerol	10	12		22
glyceryl		5		5
glyceryl butyrate		2		2
glyceryl ester		1		1
glyceryl nitrate		6		6
glyceryl palmitate		1		1
glyceryl stearate	2	1		3
glycine		2		2
glycogen		3		3
gold chloride	4	1		5
gold leaf	2	1		3
gold sulfide		1		1
Goldschmidt process	4	1	2	7
grain alcohol	4	9		13
grain sugar		1		1
gram calorie	5			5
gram centimeter	1			1
gram-equivalent		1		1
gram formula weight	14			14
gram molecular volume	7	32		39
gram molecular weight	6	95		101
granular	3	1		4
grape nuts		1		1
grape sugar	6	4		10
graphically	3	2		5
graphic formula		4		4
grating		1		1
graveyard		1		1
gravimetric	2	1	11	14
green vitriol	5	1		6
"Gre-solvents"			2	2

"group"		12		12
guano		3		3
guinea pig			2	2
gum arabic	2	1		3
gun cotton	3	6	5	14
gunstock		1		1
"gusher"			1	1
Haber process	8	10	4	22
hafnium	2	2	1	5
hair pin			1	1
"half-life"		2		2
halide	1	5		6
halogen	27	41	1	69
halogen hydride		1		1
handbag		2		2
handbook		1	1	2
"hangout"		1		1
"hay fever"		2		2
hay loft	1			1
hay mow			1	1
"hearth"			7	7
heat of decomposition		2		2
heat of formation	11	16		27
heat of fusion	2	2		4
heat of vaporization	2	3		5
heavy hydrogen	3	6		9
heavy water	5	3		8
hemotite	5	4		9
heptane	1	1	1	3
hermetically			1	1
hexacontane	1	1		2
hexadecane		1	2	3
hexagon		1		1
hexane	2	2	2	6
hexylresorcinol		1		1
high-test		1		1
hives		2		2
"hoboes"		1		1
Hoffman apparatus			6	6
Hollander beating machine			1	1
holmium	1	1	1	3
homologous	5	6		11
"hopcalite"			3	3
hormone	6	8	11	25
hornblende		1		1
Horn silver		1		1
hot plate			3	3
"hot short"		1		1
household ammonia		1		1
"housemaid"			2	2
humidifier			2	2
humidistat			1	1
hydration	24	12		26

hydraulic main		1		1
hydride		2		2
hydrobromic acid	6	6		12
hydrocarbon	25	121	26	172
hydrochloric acid	159	115	62	336
hydrocyanic			2	2
hydrocyanic acid	3	1		4
hydrofluoric acid	13	15		28
hydrogen acetate		3		3
hydrogen aluminum silicate		1		1
hydrogenate	3	13		16
hydrogenation	7		7	14
hydrogen bromide	5	8		13
hydrogen carbonate		1		1
hydrogen chlorate		1		1
hydrogen chloride	118	58	67	243
hydrogen chlorite		1		1
hydrogen dioxide			1	1
hydrogen fluoride	5	7		12
hydrogen halide		11		11
hydrogen hydroxide		1		1
hydrogen iodide	4	5		9
hydrogen nitrate		3		3
hydrogen nitrite		1		1
hydrogen oxide	1	4		5
hydrogen peroxide	30	7	8	45
hydrogen phosphate		1		1
hydrogen phosphite		1		1
hydrogen sulfate	2	6		8
hydrogen sulfide	38	65	11	114
hydrogen sulfite		3		3
hydrogen tube	2			2
hydroiodic acid	4	4		8
hydrolysis	22	23	7	52
hydrolyze	7	8		15
hydroquinone	1	1		2
hydrosulfuric acid	5	15		20
hydroxide	40	17	31	88
hydroxy		1		1
hydroxy-benzene		1		1
hydroxyl	23	3	11	37
hygroscopic		1	8	9
hymolal		3		3
"hypo"	3	6	4	13
hypochlorite	9	2		11
hypochlorous acid	19	13		32
icebox			2	2
ice cream		1	6	7
Iceland spar	2			2
igneous	2	2		4
illinium	1	2	1	4
illium		1		1
illuminating gas	13	1	12	26
ilmenite		1		1

immiscible	4	4		8
impeller	1			1
impractical		1		1
"in-between"		1		1
incandescence		2	4	6
incinerator			1	1
indestructibility		3	2	5
index of reflection		2		2
index of refraction		2		2
India ink		4		4
India rubber		1		1
indium	1	2	1	4
individualistic	1			1
induction coil	3			3
induction furnace	1	1		2
inelastic		1		1
infantile paralysis		1		1
infra-red	4			4
infusible	3			3
infusoria	1			1
infusorial earth	2	1		3
insecticide	1	14	4	19
insofar			1	1
insolubility	5	4		9
insulin		4	5	9
interact	2	6		8
interaction	1		2	3
internal combustion engine	1			1
interrelation		1		1
invar	3	2		5
invert sugar		3		3
iodate		1		1
iodic acid		1		1
iodize	1	1		2
iodoform	3	2	1	6
ion	236	324	103	663
ionic		14		14
ionization	23	26	4	53
ionize	10	17	11	38
ionium		1		1
Iran	1			1
iridium	1	10	1	12
iron carbide	5		2	7
iron chloride		1		1
iron disulfide		1		1
iron hydroxide	4			4
iron ore		5		5
iron oxide	27	28	22	77
iron pyrite	5	3		8
iron sulfate	2	3		5
iron sulfide	23	4	1	28
irradiated			1	1
irreversible	2			2
isomer	4	3		7

isomeric	1			1
isomerism	1			1
iso-octant		1		1
isopropyl alcohol		5		5
isotope	33	26	16	77
jackknife			2	2
Javelle water		2	4	6
jell		1		1
jeweler's rouge	1			1
"jigger"		3		3
Kainit		1		1
kaolin	5	10		15
kapok		2		2
Karo			2	2
katabolism			2	2
keepsake		1		1
Kekule ring		3		3
keratin		1	2	3
kernite		1		1
ketone		6		6
kilogram-calorie		2		2
kiloliter		1		1
kindling	10	18	34	62
kinetic-equilibrium		1		1
kinetic-molecular	7	5		12
Kipp generator	3	1	11	15
"knock"	1			1
Kraft		1		1
krypton	2	10	5	17
lactase		1		1
lactic acid bacteria		1		1
lactose	2	4	2	8
lampblack	3	7		10
lampshade		1		1
lanolin		3	3	6
lanthanum	1	1	1	3
lapis lazuli	1	1		2
lard oil		1		1
latex	3	1	2	6
latrines			1	1
laughing gas	2	3		5
lauric acid		1	2	3
lauryl rhodanate		1		1
lead acetate	3	9	5	17
lead arsenate		2	1	3
lead carbonate	1	6		7
lead chamber process		1		1
lead chloride		1		1
lead chromate	2	4		6
lead dioxide	5	7	1	13
lead hydroxide	1			1
lead monoxide	1	1		2
lead nitrate	2	5		7

lead oxide	4	3	10	17
lead peroxide			2	2
lead silicate			2	2
lead storage cell			6	6
lead sulfate	1	4	4	9
lead sulfide	5	5	3	13
lead tetraethyl	3		1	4
lead tetraoxide	1			1
"lead tree"		1		1
leaf mold			1	1
Le Blanc process	3			3
licorice	1	3		4
Liebig condenser		4	2	6
lifesaver		1		1
lightweight		2		2
lignin	1	3	1	5
ligno-cellulose		1		1
lime chloride	1			1
limekiln		7	5	12
linelight	2		1	3
lime-potash		1		1
lime-sulfur	1	3		4
limonite	4	2		6
linkage	2			2
linoleic acid		2		2
linolenic acid		2		2
linoxyn		5		5
linters		2		2
lipase		2		2
lipstick		1	4	5
liquid court plaster	3			3
litharge	6	1		7
lithium	12	33	2	47
lithium fluoride		1		1
lithium hydroxide		1		1
lithopone	5	9		14
logarithmic	1			1
logwood		2	7	9
luminescence	6			6
luminosity		2		2
lunar caustic	3	1		4
lutecium	1	1	1	3
macerate			3	3
madder		2		2
maesurium	1			1
magnesium	6	3		9
magnesia water		1		1
magnesite	2	3		5
magnesium acetate		1		1
magnesium bicarbonate	4			4
magnesium bromide	1	1		2
magnesium carbonate	5	4	1	10
magnesium chlorate		1		1

magnesium chloride	7	14	1	22
magnesium hydroxide	6	2		8
magnesium nitrate		1		1
magnesium nitride	7	1		8
magnesium oxide	7	23	15	45
magnesium oxychloride		1		1
magnesium silicate		3		3
magnesium silicide		1		1
magnesium sulfate	6	8	2	16
magnesium sulfide		1		1
magnetite	5	6		11
malachite	3	3	1	7
malic acid	2	1		3
maltase		1		1
maltose		16	5	21
manganate	1	1		2
manganese chloride	1			1
manganese dioxide	29	29	34	92
manganese sulfate	1			1
manganin		1		1
manganin wire			1	1
manganous	4			4
manganous chloride	1			1
manhole			1	1
maple sugar		1		1
maraschino		1		1
margarine		1	6	7
marijuana		1		1
marsh gas	5	3		8
masonite		1		1
mastic	1			1
masurium		2	1	3
matchbox			1	1
matte	3	8		11
matte glaze		1		1
Mazda lamp		1		1
Mazola			3	3
mechanical process		5		5
Meerschaum	2	2		4
mentholated		1		1
mercuric		1	1	2
mercuric chloride	6	12	1	19
mercuric fulminate	1			1
mercuric iodide		1		1
mercuric nitrate			3	3
mercuric oxide	6	15	9	30
mercuric sulfate			1	1
mercuric sulfide		5	1	6
mercurochrome	1			1
mercurous	4	1		5
mercurous chloride	6	4		10
mercurous nitrate	2			2
mercury fulminate		1		1

mercury iodide	1			1
mercury oxide	5		3	8
meta-acid		1		1
metacaine		1		1
"metal-clad"		2		2
metallography	2			2
metallurgical	4	1		5
metallurgist	2	1	1	4
metallurgy	32	62	11	105
metalware			1	1
metamorphic		2		2
metasilicate		1		1
metasilicic acid		3		3
metastable	1			1
meteorite		1		1
methane	17	52	8	77
methyl alcohol	11	25		36
methyl amine		1		1
methyl anthranilate		1		1
methyl benzene		1		1
methyl chloride		10	2	12
methylene blue		1		1
methylene chloride		3		3
methyl ether	2			2
methyl salicylate		1		1
methyl violet	11	1	1	13
metric system	2			2
microanalytical		2		2
micron	3	4		7
microorganism	1	2		3
microprojector		1		1
microphotograph	2			2
mid-ocean	1			1
milk glass		1		1
milk of lime	3	1		4
milk of magnesia	4	1		5
milk sugar		2		2
milliammeter	2			2
milligram	2	4		6
milliliter	1	73		74
millimicron		2		2
millionth	1	10	1	12
"millstock"		1		1
"mineral oil"	2			2
minium	3			3
miscible	4	11	14	29
mnemonic			1	1
"mole"		13	2	15
molecular	78	100	65	243
molybdate		1		1
molybdenum	7	12	3	22
monatomic	4			4
Monel	2	4	2	8

monobasic	4	2		6
monocalcium phosphate			3	3
monocalcium sulfate		1		1
monochlormethane			1	1
monochloro-ethane		1		1
monochloro-methane		1		1
monoclinic		1		1
monosacchrids		4		4
monovalent		1		1
monovinylacetylene	1			1
mordant	23	7	17	47
"moth balls"	2	5		7
"mother of vinegar"		1		1
motion pictures		6		6
mucous membrane		1		1
muriate of potash		2		2
muriatic acid	3	5	2	10
mustard gas		2		2
myosin		1		1
myristic acid		1		1
myxædema	3			3
naphthalene	4	7	4	15
naphthalene sulfonic acid			1	1
naphthalenic oils		1		1
naphthionic acid	1	1		2
nascent	11	1	8	20
natural gas	12	12		24
Nelson cell		4		4
neocarmine		1		1
neodymium	1	1	1	3
neon	23	23	5	51
neutralization	21	18	17	56
neutron	33	25	9	67
"New Skin"	2	1		3
newsprint		1	1	2
nichrome		4		4
nickel carbonyl	3			3
nickelic oxide		1		1
nickelous	1			1
nickelous sulfate	2			2
nickel pyrite		1		1
nickel steel		1		1
nicotine sulfate		1		1
niter pot	1	3		4
nitre cake			2	2
nitric acid	123	134	49	306
nitric oxide	34	20	5	59
nitride	1	3	1	5
nitricification			4	4
nitriify			6	6
nitrite	2	5	3	10
nitro			4	4
nitrobenzene	1	2		3
nitrocellulose	13	7	3	23

nitrogenate		1		1
nitrogen dioxide	20	26		46
nitrogen pentoxide	1	3		4
nitrogen peroxide			5	5
nitrogen tetroxide	2	2		4
nitrogen trioxide		6		6
nitroglycerine	6	22	4	32
"Nitrolime"		1		1
nitrostarch			2	2
nitrous acid	2	3	1	6
nitrous oxide	13	19		32
Nobel prize		1		1
nonane			2	2
noodle		1		1
normality	3			3
novocain	3			3
"nuclear chemistry"		3		3
numerator		3		3
nutgalls	1			1
ochre		1	1	2
octahedral	1	1		2
octane		12	1	13
octane equivalent		1		1
octane rating		3		3
octet	7			7
octyl acetate		1		1
oildag	3	3		6
"oil of vitriol"	5	2		7
olefine		3		3
oleic acid		7		7
olein		7		7
"oleo"		4	1	5
"oleum"	2		1	3
olive oil		3	3	6
opacity		1		1
open-hearth furnace	2	7		9
open-hearth process	15	8		23
optic nerve		1		1
organic acid	9	24		33
organic base		2		2
organic hydroxide		1		1
organic oxide		1		1
orpiment	1	1		2
orris root			2	2
ortho-acid		2		2
ortho-hydrogen	1			1
orthophosphoric acid		1		1
orthosilicic acid		7		7
orthosilicate		1		1
osmium	2	5	2	9
osmium oxide		1		1
Ostwald process		5		5
"overcropped"		1		1

oxalate		1		1
oxalic acid	2	5		7
oxonium	2			2
oxyacetylene	6	17	2	25
oxygenate		1		1
oxy-hydrogen	13	7	5	25
ozonate		1		1
ozonator			3	3
ozone	24	20	14	58
palmitic acid	4	5	3	12
palmitin		2	3	5
pancreatin			1	1
"panning"		2		2
paracasein		1		1
paraformaldehyde	1			1
para-hydrogen	1			1
parathormone			1	1
parathyroid			1	1
parchmentized		1		1
Paris green	2	2		4
Parke's process	3			3
Parr's peroxide bomb	2			2
pasteboard			2	2
pasteurization		2		2
pathogenic			1	1
patina		1		1
peacetime		1		1
peanut butter		1		1
peanut butter oil		2		2
pectin	2	3		5
peeling		1		1
pellagra		3		3
pentane	2	6	1	9
peptid		1		1
peptization		1		1
peptize		1		1
peptone		3	1	4
percussion		3	6	9
periodicity	1			1
peristalsis			2	2
permeability	1			1
Permutit	6	1		7
Peruvian bark		1		1
petrolatum	2		3	5
petroleum coke		1		1
"Pharaoh's serpents"		1		1
pharmaceutical		3	2	5
pharmacist	1		3	4
pharmacopoeia		2		2
phenacetin		2	2	4
phenol	4	17	6	27
phenolphthalein	3	5	10	18
pheno-thiazine		1		1
philosopher's stone	5			5

phloem			1	1
phlogiston	5	3	22	30
phosphate alum		1		1
phosphide	1		1	2
phosphine	2	2		4
phosphor	1			1
phosphor	1			1
phosphor bronze	1			1
phosphoric acid	13	8	1	22
phosphoric anhydride		1		1
phosphoric pentoxide	1			1
phosphorous oxide			1	1
phosphorous pentoxide	10	8	1	19
phosphorous sesquisulfide	3		1	4
phosphorous tribromide	1			1
phosphorous trichloride		1		1
phosphorous trioxide	1			1
photo electric	1	2	7	10
photoflash	2	1		3
photoflash lamp		1		1
photographer		1		1
photographic plate		3		3
photon	2			2
photosynthesis	4	10	11	25
phthalic acid	1	1		2
picric acid	7	8	5	20
"pickling"		1		1
piecrust		1		1
pig iron	26	4		30
pilot light		1		1
pinchcock			6	6
pineal			2	2
pinkish	1			1
pipe line		2		2
pitchblende	2	2		4
pitrescin			1	1
Pintsch gas			1	1
pituitrin			1	1
placer mining	2			2
plaster of Paris	12	15		27
plasticity		2		2
plasticize		4		4
plasticizer	2			2
plate glass	2	2		4
platinite	4			4
platinize	3			3
platinum chloride	2			2
plumbago	2			2
polarization		1		1
polonium	3	13	1	16
"poly" gasoline		1		1
polymerization		2		2
polymerize	1	5		6
polysaccharids		1		1

Portland cement	3	4	1	8
positron		8		8
potash lye	1			1
potassium acid tartrate	1			1
potassium alum	3	1	1	5
potassium aluminate			1	1
potassium aluminum silicate	1			1
potassium aluminum sulfate		1	1	2
potassium ammonium		1		1
potassium ammonium phosphate	1			1
potassium antimony tartrate		1		1
potassium bicarbonate	3	1		4
potassium bromide	2	3	2	7
potassium carbonate	4	6	3	13
potassium chlorate	24	33	37	94
potassium chloride	12	14	11	37
potassium dichromate	5		1	6
potassium ferricyanide	13	1		14
potassium ferrocyanide	7			7
potassium fluoride	1	1		2
potassium hydrogen fluoride		1		1
potassium hydrogen tartrate	1	1		2
potassium hydrogen sulfate		3		3
potassium hydroxide	19	2	5	26
potassium iodide	4	2	1	7
potassium manganate	2			2
potassium nitrate	16	12	15	43
potassium oxide		2		2
potassium permanganate	9	8	11	28
potassium phosphate		1	1	2
potassium silicate	2			2
potassium sulfate	4	4	1	9
potassium sulfide	2		3	5
potassium sulfite	1			1
potato bug		1		1
potter's wheel		7		7
praseodymium	1	1	1	3
precipitated chalk	2			2
precipitator		4		4
preheat	2	4		6
"Prestolite"	1			1
Prestone	1	4		5
preshrunk		1		1
primuline		2		2
procaine		1		1
producer gas	12	8	5	25
"proof"		2	10	12

propane	4	15		19
propellant		1	1	2
propyl alcohol	1	6		7
propyl chloride		1		1
propylene		3		3
protease			1	1
proton	48	57	14	119
protozoan			1	1
protroactinium		2		2
proximate			2	2
Prussian blue	6	2		8
prussic acid	2			2
ptyalin		3	3	6
"puddled"		1		1
pulverization	2			2
purifier		2		2
purplish	1			1
putrescin		1		1
"Pyrene"	1	1		2
pyrethrum			5	5
pyrex	8	2	1	11
pyridine			1	1
Pyrofax	1		2	3
pyrogallie	1	1		2
pyraligneous acid			2	2
pyrolusite	5	4		9
pyrophoric		1		1
pyrotechnics	1			1
pyroxylin	12	6	8	26
quadrivalent	2			2
qualitative	6	1		7
quantum	2			2
quartzoid		1		1
quenching tower		1		1
quicklime	19	7	5	31
quinoline yellow			1	1
radioactive	23	40		63
radioactivity	35	11	4	50
radiosodium		1		1
radium bromide	4	1		5
radon	14	9	2	25
railroad frog		1		1
raincape		1		1
raincoat		2		2
ramet		1		1
rarefy	1			1
rasorite		2		2
rational formula		2		2
rayon	7	22	9	38
razor blade		1		1
reactant		2		2
recrystallization		4		4
recrystallize	1		2	3
redhead		2		2

redistilled	1			1
red lead	6			6
"red prussiate of potash"	2			2
redtop		1		1
reflector	1	2		3
reforestation		2		2
refrigerant		3	1	4
relative humidity	1	6		7
rennet	1			1
rennin		1	1	2
reoccur	1			1
replaceable	7			7
residium			2	2
resinous	1			1
resistance furnace		2		2
resorcin		1		1
restate	1			1
resublime		1		1
resuscitation	2			2
resuscitator		1		1
reversible	11	28	4	43
rhenum	2	2	1	5
rhodium	1	4	1	6
rhombic	8	13		21
right-angled			1	1
"ring"		4		4
ringstand			1	1
rink			1	1
"roast"	14	10		24
robot			1	1
Rochelle salt	3	1	3	7
rock wool		1		1
root beer	1			1
rose water			1	1
rotary scrubber		1		1
rubberoid		1		1
rubidium	5	10	1	16
rustproof		1		1
ruthenium	1	3	1	5
rutile	1	1		2
saccharids		3		3
saccharin		2	8	10
safety glass		6		6
saggers		3		3
saled dressing	1			1
sal armoniac	6	1		7
saleratus	1			1
salesclerk		1		1
salicylic acid		2	6	8
sal soda	2	4		6
saltcake			2	2
"salting out"		2		2
salvarsan		2		2

samarium	1	1	1	3
sandbath			1	1
saponification	2	3	3	8
saponify		2	2	4
scalepan		1		1
scandium	1	3	1	5
scarlet fever			2	2
scrubber	3	1	1	5
"scrubber washer"			34	34
scruting			1	1
sedimentation		7		7
Seidlitz powder	3			3
selenium	2	12	2	16
self-medication		1		1
semibituminous		1		1
semi-permeable	4			4
semisolid		2	1	3
semitransparent		1		1
septic tanks			2	2
serecin		2	1	3
set-up			4	4
shatterproof			1	1
shavings		2		2
sheepskin			1	1
sheetiron		2		2
sherardizing		2		2
"shoddy"	1	1		2
"shooting"		2		2
showcase		4		4
sickroom	1			1
sidehead		1		1
siderite	3	1		4
silane		1		1
silica gel		3		3
siliceous	1			1
silicic acid	5	8		13
silicide		2		2
silicon carbide	2	3		5
silicon chloroform		1		1
silicon dioxide	10	18	2	30
silicon fluoride	1	1		2
silicon hydride		1		1
silicon iron		1		1
silicon oxide	1	3		4
silicon tetrachloride		1		1
silicon tetrafluoride	2	2		4
silver bromide	8	3	12	23
silver chloride	12	16	2	30
silver glance		1		1
silver halide	6	3		14
silver iodide	4			4
silver nitrate	24	28	8	60
silver sulfide	3	3		6

silver vitellin			1	1
sintered		1		1
"size"		2		2
sizing		2	4	6
"skiphoist"		1		1
skylight		2		2
slaked lime	22			22
"slip"		1		1
"slivering"		1		1
slosh		1		1
"sluicing"	1			1
smithsonite		1		1
smokestack	3		1	4
"snicker"		1		1
snowdrift		2		2
snowpress		1		1
soapmaking		2		2
soapsuds	1	1	6	8
soda ash	3	5	1	9
soda lime	1	2	1	4
soda lye	1			1
soda water	1			1
sodium acetate	2	5	1	8
sodium aluminum boron silicate glass		1		1
sodium aluminum carbonate		1		1
sodium aluminum fluoride		1		1
sodium aluminum silicate	1			1
sodium arsenite		2		2
sodium aurocyanide	1			1
sodium benzoate		1		1
sodium bicarbonate	30	9	7	46
sodium bichromate		1		1
sodium bisulfate	3		4	7
sodium bisulfite	3	1		4
sodium bromide	8	5		13
sodium carbonate	50	63	10	123
sodium chlorate	8	11		19
sodium chloride	77	77	15	169
sodium citrate		1		1
sodium cyanide	2	4	1	7
sodium diacid phosphate			1	1
sodium ferrocyanide		1		1
sodium fluoride		2	2	4
sodium fluosilicate		1		1
sodium hexametaphosphate		1		1
sodium hydrogen carbonate	1	20		21
sodium hydrogen phosphate		1		1
sodium hydrogen sulfate	1	3		4
sodium hydrogen sulfite		1		1
sodium hydrosulfide			1	1
sodium hydroxide	268	92	71	431
sodium hypochlorate		2		2

sodium hypochlorite	12	1	1	14
sodium iodate		2		2
sodium iodide	3	4		7
sodium lauryl sulfate		1	1	2
sodium molybdate		1		1
sodium nitrate	22	25	6	53
sodium nitrite	4	5		9
sodium oxide		6		6
sodium perborate			2	2
sodium perchlorate		1		1
sodium peroxide	10	2	1	13
sodium phosphate	2	4	2	8
sodium potassium tartrate		1		1
sodium silicate	6	8	5	19
sodium silico-fluoride		1		1
sodium stannate		1		1
sodium stearate	2	2		4
sodium sulfate	15	14	5	34
sodium sulfide	2	4		6
sodium sulfite	9	5	3	17
sodium tartrate		1		1
sodium tetraborate	1	2		3
sodium thiocyanate		1		1
sodium thiosulfate	7	6	1	14
sodium vapor lamp	1			1
sodium zincate	1			1
soft drink		2		2
solidification	1	2		3
solubility	39	72	25	136
solute	6	47	25	78
solvated		1		1
Solvay process	9	11		20
soybeans		4		4
space-lattice		2		2
"sparkers"		1		1
spark plug		1		1
spearmint		1		1
specific gravity	26	5		31
specific heat	8	4		12
specific weight		1		1
spectograph	10	1		11
spectrometer	2			2
"spent" lye		5		5
spermaceti			1	1
spiegeleisen		3		3
spinneret	1	5	5	11
spintharoscope		2		2
spirits of Hartshorn	1	1		2
"spirit varnishes"		2		2
"spit"			1	1
"split"		1		1
spontaneous combustion	12			12
Spry		1		1

"sputter"			3	3
staghorn			1	1
stalagnite	4	1		5
standpipe	1		2	3
stannic	4			4
stannic acid	4			4
stannic chloride	5	1		6
stannic hydroxide	5			5
stannic oxide		1		1
stannous	4			4
stannous chloride	3	1		4
stannous hydroxide	1			1
staphylococci			2	2
startling	1			1
static electricity	1			1
stearate		1		1
stearic acid	6	12	3	21
stearin		10	2	12
steatite		1		1
steelwork		1		1
stereochemistry		1	2	3
stellite		2		2
Sterno		1	2	3
stibnite		1		1
"stock"			1	1
stoker		3	3	6
stoneware	1			1
stopcock	1		6	7
storage battery	9	23		32
"stoves"		2		2
stratosphere	11	7		18
streamline	2			2
streptococci		1	2	3
"strikeback"		2		2
stringbean		1		1
stroboscope	1			1
strontium	11	7	3	21
strontium chloride		1		1
strontium nitrate			3	3
structural formula	9	27		36
structural ring formula		3		3
"stuffing"			1	1
stylus			1	1
subatomic		1		1
subgroup	1			1
sublimation		2		2
submicroscopic		1		1
subnitrate		1		1
subnumber			8	8
subscript	2	5		7
sucrose	6	27	2	35
sugar of lead		1		1
"sulfate of ammonia"	1			1
sulfate of potash		1		1

Sulfate process		4		4
sulfide	50	56	7	113
sulfite	13	70	13	87
Sulfite process		6		6
sulfonanilamide		1		1
sulfonate	1		4	5
sulfonation		1		1
sulfur chloride	2		1	3
sulfur dichloride	1			1
sulfur dioxide	68	79	17	164
sulfur oxide			2	2
sulfur trioxide	18	13	2	33
sun lamp	2	1		3
supercool	1			1
superheat		2		2
superheater	1		4	5
superphosphate		8	5	13
superphosphate of lime	4			4
supersaturate	7	13		20
supersaturation	1			1
surface tension	1	1	5	7
suspensoid	2	1		3
syllabi			1	1
synthesize	5	12		17
Synthetic ammonia process		5		5
tailings	1			1
tanbark	1	7		8
"tang"		1		1
tankage		1		1
tannic acid	3	6		9
tantalum	1	12	1	14
tantalum carbide		1		1
tantiron		2		2
"taphole"			2	2
"tapped off"		1		1
"tar extractor"			1	1
tartar emetic	1	1		2
tartaric acid	3	5	1	9
tartrates		2		2
teacupful			1	1
teargas	1	1		2
"tech"		4		4
television			1	1
telluride		1		1
tellurium	1	7	1	9
tellurous acid	1			1
tensile		5		5
tensile strength	4			4
terbium	1	1	1	3
termines		1		1
ternary	9	8		17
test tube	13	48	53	114
tetany			1	1

tetra-chloro-methane		1	2	3
tetra-chloro-silane		1		1
tetra-ethyl lead		3		3
tetravalent	1			1
thallium	1	1	1	3
theelin			1	1
thein			1	1
theobromine			1	1
thermit	9	9	10	28
thermostat	2		6	8
thistle tube	2			2
thorium	4	3	1	8
thorium oxide		2		2
thulium	1	1	1	3
thymol			2	2
thyroxin	1	1	5	7
timesaver		1		1
"timer"			1	1
tin bichloride		1		1
tin chloride	3			3
"tinning"		3		3
tin oxide	3			3
tinsmith	1			1
tinware	1	1		2
"Ti-pure"		1		1
titanium	2	7	1	10
titanium chloride		1	3	4
titanium dioxide		8		8
titanium oxide		1		1
titanium tetrachloride			1	1
titanium white		2		2
"Titanox"		1		1
titration	3			3
toluene	3	10		13
toning		3		3
toolmaker		2		2
toothpaste			1	1
tragacanth			1	1
tribasic	2	2		4
tricalcium aluminate		1		1
tricalcium silicate		2		2
tricalcium sulfate	1			1
tri-chloro-methane		1		1
tri-chloro-silane		1		1
tri-clinic			1	1
tricresyl phosphate		1		1
trihydroxy		1		1
trihydroxy-propane		1		1
tri-nitri-cellulose		1		1
trinitrotoluene	5	6		11
trioxide	2			2
triplet		1		1
trisilicic acid		1		1

trisodium phosphate	8	4		12
tritium			3	3
trivalent	9	1		10
troposphere	3			3
truncated		1		1
tubulate	1			1
tumeric			1	1
tung			1	1
tung oil		6		6
tungsten carbide		1		1
Turnbull's blue	5			5
turnings	1			1
tuyere	1	1		2
"twilight zone"		2		2
Twitchell process			1	1
Tyndall effect	2	8		10
type metal	7	2		9
typographical		1		1
Tyrian purple		1		1
ultrafilter		4		4
ultramarine	2	2		4
ultramicroscope	6	12	3	21
uncompahgre		1		1
underweight		1		1
underwrite	1			1
Unguentine	1			1
univalent	11			11
uranium	11	21	1	33
uranium oxide	1	2		3
U-tube	1			1
vacuum cleaner		3		3
vacuum pump	1	2		3
vacuum tube	5	4		9
valencia		2		2
vanadium	14	8	2	24
vanadium oxide	1		2	3
vanadium pentoxide		2		2
vaporization		1	10	11
"vat dyeing"	5	3		8
Venetian red		1		1
vent plug		1		1
verdite		1		1
verification			4	4
vernier		1		1
"vigilante"		1		1
villi			1	1
virginium		3		3
viscose	1	3	5	9
Viscose process		2		2
viscosity			13	13
viscosimeter			3	3
"vitrified"		2		2
"volatile alkali	2			2

volatility			1	1
volumetric	1	1	1	3
Vorce cell	5	3		8
vulcanite	1			1
washbowl	1			1
washing soda	9	8		17
washwomen		1		1
watch glass			4	4
waterdog	1	2		3
water gas	11	11		22
water glass	2	4		6
waterlogging		1		1
watermark		1	1	2
wave length	4	6		10
"weft"			1	1
well-being		1		1
Wellsbach burner		2		2
Wellsbach mantle		3		3
whipped cream		2		2
"white arsenic"		1		1
white carbon		1		1
white lead	16	23		39
white vitriol	2	1		3
whiting	3	4		7
whitish	2			2
whooping cough			1	1
wintergreen		2	2	4
windowpane			1	1
wollastonite		1		1
wood alcohol	5	11		16
woodshed			1	1
Wood's metal	2	3		5
workability		1		1
workroom		1		1
World War		1		1
wrought iron	18	7		25
xanthate cellulose	1			1
xanthoproteic		2	2	4
xenon	4	13	4	21
xylene	1			1
yellow protein test		1		1
"yellow prussiate of potash"	2			2
ytterbium	1	1	1	3
yttrium	2	2	1	5
zein		1		1
zeppelin-type			1	1
zincate	1			1
zinc blende	1	4		5
zinc carbonate	1			1
zinc chloride	16	7	1	24
zinc hydroxide	7			7
zincite	4			4
zinc nitrate	2			2
zinc oxide	10	19	3	32

zinc stearate			1	1
zinc sulfate	5	8	1	14
zinc sulfide	6	15		21
zinc white	4	11		15
Zip		1		1
zircon		1		1
zirconium	1	4	1	6
zirconium oxide	1			1
Zonite			1	1
"zweiback"		2		2
zymase		4		4

Although the physics list is approximately two-thirds shorter than the chemistry list, the percent of words with single frequencies in the physics list is only about three-fourths the percent of words occurring but once in the chemistry books. Moreover, many of those on the physics list are words with easy derivatives, while a great number of chemistry words are names of chemical compounds.

Both the composite list and the list of important words from the chemistry books are considerably longer than those from the physics textbooks. This is due to the fact that the chemistry group includes a large number of names of chemical compounds. The chemistry list includes 829 words that are names of elements, compounds, commercial products, and minerals, while the physics list has only 114 such terms. Powers found that the chemistry books which he used had 856 such terms.

In the composite physics list there are 225 words that occurred in all three sources; in the chemistry list there are 291 terms common to all the books. There are 336 words that are common to both the physics and chemistry books.

From the composite list of uncommon words all those words having a frequency of one, two, three, etc. were counted. Tables V and VI show the number of words occurring in each of these groups.

Table V

FREQUENCY DISTRIBUTION OF
UNCOMMON WORDS IN PHYSICS

Frequency	A	B	C	Total
1	269	243	609	721
2	160	139	57	356
3	94	66	72	232
4-10	248	203	163	614
11-25	86	64	62	212
26-100	43	36	33	112
Total	900	751	596	2247

Table VI

FREQUENCY DISTRIBUTION OF
UNCOMMON WORDS IN CHEMISTRY

Frequency	D	E	F	Total
1	346	696	276	1318
2	185	221	125	531
3	114	129	59	302
4-10	270	317	138	725
11-25	95	115	50	260
26-100	40	54	23	117
101-1000	7	9	2	18
Total	1057	1541	673	3271

Tables VII and VIII show the percent of the total number of uncommon words occurring only one time, occurring twice, etc...

Table VII

PERCENTAGE DISTRIBUTION OF
UNCOMMON WORDS IN PHYSICS

Frequency	A	B	C	Total
1	29.9	33.4	35.1	32.0
2	17.8	18.5	9.7	15.8
3	10.4	8.8	12.1	10.3
4-10	27.6	26.0	27.3	27.3
11-25	9.6	8.6	10.4	9.4
26-100	4.8	4.8	5.5	4.9

Table VIII

PERCENTAGE DISTRIBUTION OF
UNCOMMON WORDS IN CHEMISTRY

Frequency	D	E	F	Total
1	31.8	45.2	41.1	40.3
2	17.5	14.3	18.8	16.2
3	10.8	8.4	8.8	9.2
4-10	25.5	20.6	20.5	22.2
11-25	8.9	7.5	7.4	7.9
26-100	3.7	3.5	3.4	3.5
101-1000	.7	.6	.3	.5

Tables III and V show that 721 uncommon words occur only once.

This is 32 percent of the total of 2247 uncommon words in physics. Those that occur two or three times make an additional 23 percent. Thus it can be seen that approximately 58 percent of the uncommon words in the physics textbooks occurred only three times or less.

Tables VI and VIII show that of a total of 3271 uncommon chemistry words 1318 occur only once. This is 40 percent of the total. The 833 words with a frequency of two or three make up 25 percent of the total. This large number of words with a small frequency makes an adequate understanding of the words almost impossible or at least very difficult. It should not be assumed, however, that these words that occur only once in a textbook should be eliminated, for many are absolutely necessary. There are others that are known by most pupils even though the words do not appear in Thorndike's word list. Examples of such words are: whooping cough, firecracker, mail-order, bedbug, underwater, windowpane, and wintertime.

The words with the highest frequency in the three physics textbooks are: alternating current, magnetic field, lines of force, galvanometer, and focal length. Those with the highest frequency in the chemistry books in the order of their rank are: ion, carbon dioxide, sodium hydroxide, hydrochloric acid, and nitric acid. It is an interesting fact that of the Powers' list of physics terms with the highest frequency not one appears in the group above. This is due to the fact that since Powers made his study, words found in the Powers' study have been added to the list of common words.

Tables V and VII show that over 14 percent of the physics list occurred over 11 times, while approximately 12 percent of the uncommon chemistry terms were in this group.

Although Powers used different intervals, his findings for physics are shown in Table IX for comparison with Tables V, VI, VII, and VIII.

Table IX

POWERS' LIST OF UNCOMMON WORDS IN PHYSICS

Frequency	1st book		2nd book	
	Words	%	Words	%
1	697	45.6	680	46.5
2	207	13.5	215	14.7
3	129	8.4	132	9.0
4	94	6.1	71	4.8
5	50	3.3	58	3.9
Over 5	350	22.9	305	20.8
Total	1526		1461	

Tables V, VII, and IX show noticeable differences in both number and percentage of words occurring in the various frequency intervals. Powers' survey showed approximately 46 percent of the 2987 uncommon physics words occurring only one time. As previously stated, the physics textbooks used in this investigation had only 32 percent of the uncommon words occurring one time. The recent books had about 26 percent of the uncommon words occurring two or three times. The physics textbooks examined by Powers had about 22 percent of the words occurring in this group. Direct comparison of the frequencies above four in Tables V, VII, and IX is impossible because of the difference in the intervals selected, but it is quite evident that the tendency now is for the higher percentages to be in the frequencies above one.

These hundreds of words occurring only a few times in a book could

scarcely be considered as important when considering the book as a whole. In deciding what words of the composite list could be considered important, the criteria used were: (1) a word with a frequency of ten or more in any one or all three books of either the physics or chemistry group, and (2) a word with a frequency between five and ten and occurring in all three books of either group. The words "composite" and "important" are borrowed from the terminology used by Professor S. R. Powers.³ Table X shows the number of important words in each book and the percent of the composite list that are on the important list.

Table X

NUMBER AND PERCENTAGE OF IMPORTANT WORDS

Book	Number	% of uncommon that are important	% of important words in each group
A (Physics)	331	36.8	
B	316	42.1	
C	261	43.8	
Total	908		40
D (Chemistry)	374	32.1	
E	495	35.3	
F	285	43.4	
Total	1154		35
Powers' Selections			
Physics			55
Chemistry			40

³ Powers, *op. cit.*, pp. 220-245.

These important words and their total frequencies in both chemistry and physics are listed in Table XI.

TABLE XI
IMPORTANT UNCOMMON WORDS IN PHYSICS AND CHEMISTRY

Word	Total	Word	Total
abrasive	12	anhydrous	35
absolute humidity	16	aniline	10
absolute temperature	89	anode	141
acetaldehyde	15	antifreeze	38
acetic acid	83	aqua fortis	8
acetone	24	aqua regia	33
acoustic	13	Archimede's principle	44
activate	11	arc lamp	30
adsorb	33	aspirator	36
adsorption	41	astigmatism	19
agonic	10	audibility	11
air brakes	13	audio-frequency	35
air cell	10	audiophone	10
air conditioning	21	babbitt	7
air pump	59	baking powder	18
aldehyde	27	baking soda	19
algebraic	18	balance wheel	27
alizarin	11	balloonist	6
allotrope	61	barium chloride	41
alpha ray	76	barometric	16
alternating current	239	bathysphere	12
alternator	10	battery jar	18
altimeter	12	bauxite	11
aluminum chloride	12	Becquerel rays	11
aluminum hydroxide	36	bell jar	37
aluminum oxide	37	benzine	30
aluminum silicate	13	benzoic acid	8
aluminum sulfate	15	beriberi	6
ammeter	134	Bernoulli's effect	28
ammonium chloride	66	beryllium	17
ammonium hydroxide	102	beta	15
ammonium nitrate	20	beta ray	43
ammonium sulfate	40	bevel gears	7
amperage	19	binary	19
amphoteric	14	binding post	37
amplifier	61	bisulfite	10
aneroid	14	bivalent	13
aneroid barometer	13	"blast"	23
angle of incidence	52	blast furnace	62
angle of reflection	27	"block and tackle"	14
angle of refraction	10	bombardment	8
anhydride	51	bone black	16

Bordeaux mixture	9	center of movements	12
boric acid	15	center of oscillation	21
boron	16	center of percussion	17
Bourdon pressure gauge	18	centrifuge	8
brake shoe	9	centripetal	15
bright-line spectra	14	chlorate	9
British Thermal Unit	160	chlorinate	11
bromine	138	choke coil	17
Brownian Movement	26	chromatic aberration	19
Bunsen burner	121	cinnabar	9
Bunsen photometer	14	clockwise	40
butane	18	clothesline	5
cadmium	17	coal gas	32
caisson	13	coal tar	34
calcination	11	collodion	17
calcite	10	colloid	79
calcium bicarbonate	8	colloidal	287
calcium carbide	21	compound bar	52
calcium carbonate	79	compressibility	17
calcium chloride	52	compressional waves	20
calcium cyanamide	15	compression pump	21
calcium fluoride	10	compression stroke	18
calcium hydroxide	105	compressor	18
calcium oxide	31	conductance	14
calcium phosphate	20	Congo red	10
calcium silicate	12	Contact process	19
calcium sulfate	29	continuous spectra	11
calibrate	32	convection	97
camshaft	10	converter	15
candle-power	115	copper hydroxide	32
cane sugar	12	copper nitrate	12
carbide	9	copper oxide	97
carbolic acid	12	copper sulfate	106
carbon bisulfide	34	copper sulfide	17
carbon dioxide	563	corrosion	64
carbon disulfide	26	corrosive sublimate	11
carbonic acid	38	cosmic ray	42
carbon monoxide	180	coulomb	17
carbon tetrachloride	42	"cracking"	26
carborundum	22	crankshaft	48
Cartesian Diver	11	critical angle	18
cast iron	6	cross-section	6
catalyst	258	cryolite	25
catalytic	107	crystallization	42
catch-bucket	15	cupric	9
cathode	187	curvilinear	12
cathode ray	82	cyanamide	10
caustic potash	10	cyanide process	19
caustic soda	57	decibel	18
cellophane	27	decimeter	19
cellulose nitrate	22	dehydrate	34
center of curvature	50	dehydration	26
center of gravity	150	demagnetize	17

denature	26	ethane	25
dessicator	11	ethanol	11
destructive distillation	14	ethyl acetate	12
detergent	11	ethyl alcohol	63
detonate	5	ethylene	29
detonation	13	ethylene glycol	14
detonator	11	Ethyl gasoline	16
deuterium	16	eudiometer	20
deuteron	12	evaporating dish	14
dew point	33	exhaust pump	13
diatomic	19	exhaust stroke	11
Diesel engine	47	expansibility	13
diffract	10	eye piece	43
dipping needle	19	eye strain	9
direct current	124	farad	16
displacement	37	farsighted	6
dissociation	33	Fehling's solution	16
distillate	41	feldspar	19
do	31	ferric	37
dolomite	12	ferric chloride	24
door bell	12	ferric hydroxide	12
Doppler effect	11	ferric oxide	27
downstroke	12	ferrous	44
Draft	7	ferrous chloride	15
driveshaft	22	filtrate	18
dry cell	106	firebox	14
dry ice	18	fire brick	9
dyestuff	10	flashlight	33
dyne	32	flatiron	12
effervescent	11	floodlight	10
effort arm	17	flotation	31
effort distance	38	fluorescence	28
electric cell	17	fluoride	5
electric furnace	49	fluorine	85
electric light bulb	18	focal length	155
electrification	37	focal point	26
electrolysis	243	foot-candle	88
electrolytic	104	foot-poundal	10
electrolyze	9	force pump	25
electromagnetic	72	fractional distillation	23
electrophorous	17	Frasch process	17
electroplate	28	fuel oil	10
electroscope	91	fungicide	13
electrostatic	50	fusible	16
Elixir	6	gallium	6
emery wheel	17	galvanic cell	38
empirical formula	13	galvanometer	175
endothermic	10	gamma	11
Epson salts	15	gamma ray	27
equilibrant	30	gasoline engine	46
erg	40	gearshift	13
escapement	5	gel	19
ester	60	germanium	5

German silver	34	hypochlorous acid	32
germicide	19	hypostatic	11
glycerol	22	illuminating gas	35
Goldschmidt process	7	impedance	17
grain alcohol	16	incandescence	52
gram-centimeter	43	incident ray	27
gram formula weight	14	inclined plane	59
gram-meter	13	index of refraction	44
gram molecular volume	39	indirect lighting	14
gram molecular weight	101	induced current	18
grape sugar	10	inductance	38
graphically	19	induction coil	72
grating	11	infra-red	19
gravimetric	14	input	20
"group"	12	insecticide	19
gun cotton	14	intake stroke	14
gyrocompass	12	intermittent siphon	10
Haber process	22	invar	19
hafnium	5	inversely	14
halftones	7	iodoform	6
halogen	69	ion	740
heat of evaporation	12	ionic	14
heat of formation	27	ionization	58
heat of fusion	30	ionize	56
heat of vaporization	21	iron oxide	80
helix	36	isotope	83
hexane	6	jackscREW	17
homologous	11	joule	12
hormone	25	kaolin	15
humidify	11	kilogram-meter	18
hydration	34	kindling	65
hydraulic press	34	kinetic-molecular	12
hydrobromic acid	12	Kipp generator	15
hydrocarbon	172	krypton	18
hydrochloric acid	336	lactose	8
hydro-electric	12	lampblack	13
hydrofluoric acid	28	latex	6
hydrogenate	16	lead acetate	17
hydrogenation	14	lead dioxide	19
hydrogen bromide	13	lead oxide	17
hydrogen chloride	243	lead peroxide	8
hydrogen fluoride	12	lead storage cell	33
hydrogen halide	11	lead sulfate	11
hydrogen peroxide	45	lead sulfide	13
hydrogen sulfide	114	Leyden jar	47
hydrolysis	52	lift pump	26
hydrolyze	15	limekiln	12
hydrosulfuric acid	20	lines of force	193
hydroxide	88	lithium	47
hydroxyl	37	lithopone	14
hygrometer	21	lodestone	19
"hyppo"	14	longitudinal waves	14
hypochlorite	11	loud-speaker	32

lumen	23	neon	93
Magdeburg hemispheres	17	neutralization	57
magnesium carbonate	10	neutron	108
magnesium chloride	22	nichrome	31
magnesium oxide	45	nitric acid	306
magnesium sulfate	16	nitric oxide	59
magnetic field	198	nitride	5
magnetic pole	36	nitrite	10
magnetization	22	nitro-cellulose	25
magnification	13	nitrogen dioxide	46
malachite	7	nitroglycerine	32
maltose	21	nitrous acid	6
manganese dioxide	98	nitrous oxide	33
manometric flame	13	octane	16
matte	11	open-hearth process	23
mechanical advantage	130	organic acid	33
meniscus	10	oscillatory	15
meniscus lens	11	oscillograph	15
mercuric chloride	19	osmium	9
mercuric oxide	30	overflow can	10
mercurous chloride	10	oxyacetylene	25
metallurgy	106	oxy-hydrogen	25
meter stick	44	ozone	59
methane	77	palmitic acid	12
methyl alcohol	36	pendulum bob	17
methyl chloride	12	pentane	9
methyl violet	13	penumbra	22
metronome	11	periscope	19
mi	14	permalloy	11
microfarad	11	perpetual-motion	15
microphone	55	phenol	27
mil	22	phenolphthalein	18
milliammeter	17	phlogiston	30
milligram	13	phosphoric acid	22
milliliter	76	phosphorous pentoxide	19
millionth	115	photoelectric	84
miscible	32	photometer	21
"mole"	15	photon	65
molecular	354	photosynthesis	25
molybdenum	23	picric acid	20
Monel	8	pig iron	31
monochromatic	17	pile-driver	11
mordant	47	pinion gear	12
Morse Code	9	pith ball	34
moth balls	15	plaster of Paris	27
motion pictures	73	plate-circuit	13
muriatic acid	10	platform balance	16
naphthalene	18	plumb line	12
nascent	20	polarity	65
natural gas	26	polarization	25
nearsighted	6	polaroid	11
nearsightedness	13	polonium	16
needle valve	10	Portland cement	8

potassium alum	5	rotor	60
potassium bromide	7	rubidium	16
potassium carbonate	13	ruthenium	5
potassium chlorate	94	saccharin	10
potassium chloride	37	sal ammonia	7
potassium ferricyanide	14	saponification	8
potassium hydroxide	31	screen-grid	11
potassium iodide	7	"scrubber washer"	34
potassium nitrate	44	secondary coil	98
potassium permanganate	31	selenium	15
potassium sulfate	9	self-exciting	13
powerhouse	7	self-induction	21
powerstroke	22	semi-Diesel engine	10
pressure cooker	21	series wound	22
pressure gauge	14	sewing machine	11
primary coil	86	short-circuit	24
principal focus	61	shunt-wound	17
prism binoculars	10	silicic acid	13
projection lantern	11	silicon dioxide	21
"proof"	12	silver bromide	23
proof plane	12	silver chloride	30
propane	19	silver halide	14
propeller shaft	12	silver nitrate	62
proportionality	10	soapsuds	8
proton	119	soda ash	9
pyrex	23	sodium acetate	8
pyroxylin	26	sodium bicarbonate	47
quicklime	31	sodium bromide	13
radioactive	74	sodium carbonate	123
radioactivity	76	sodium chloride	175
radio-frequency	26	sodium cyanide	7
radiometer	19	sodium hydroxide	433
radon	29	sodium hypochlorite	14
rarefaction	27	sodium nitrate	53
rarefy	7	sodium peroxide	13
rayon	40	sodium silicate	19
reactance	12	sodium sulfate	34
real image	63	sodium sulfite	17
rectifier	27	sodium thiosulfate	14
rectilinear	13	solenoid	11
reflector	47	solidification	21
refractive	11	solubility	141
regelation	12	solute	84
relative humidity	95	specific gravity	163
resistance arm	14	specific heat	76
resistance box	15	specific weight	80
resistance distance	37	spectograph	11
resonator	14	spherical aberration	22
retentivity	16	spinneret	12
reversible	43	spontaneous combustion	12
rhodium	5	spotlight	6
rhodium	7	spring balance	67
ring stand	23	static electricity	56

static machine	11	trivalent	10
stator	19	tungar rectifier	13
steam engine	96	tuning fork	51
stearic acid	21	Tyndall effect	10
stearin	12	umbra	23
step-down-transformer	23	ultramicroscope	26
step-up-transformer	17	uni-directional	10
stopcock	31	upstroke	13
storage batteries	101	uranium	73
storage cells	44	vacuum cleaner	27
stratosphere	43	vacuum tubes	50
streamline	20	vanadium	24
street car	18	vaporization	21
strontium	21	vapor lamp	11
structural formula	32	velocity ratio	28
sucrose	35	venturi	7
sulfide	113	"virtual" image	58
sulfite	87	viscose	8
sulfur dioxide	169	viscosity	20
supercharger	6	voltaic cell	64
superphosphate	13	vulcanite	16
supersaturate	22	washing machine	11
surface tension	16	washing soda	17
synchronesh	8	water gas	22
synchronize	5	watt-hour	15
tantalum	15	watt-hour meter	16
tartaric acid	10	wattmeter	11
telegraphy	12	wave length	159
telephony	15	wave-train	23
television	18	wheel and axle	47
tellurium	9	white lead	44
ternary	34	Wilson cloud chamber	15
test tube	130	wood alcohol	18
thermometry	14	worm gear	14
thermos bottle	17	wrought iron	25
thermostat	52	yttrium	5
thorium	16	zinc chloride	24
titanium	10	zinc oxide	32
toluene	13	zinc stearate	14
Torricellian apparatus	10	zinc sulfate	14
torsion	10	zinc sulfide	26
tourmaline	14	zinc white	15
trinitrotoluene	11	zirconium	6
trisodium phosphate	12		

Table XI includes the important words from the chemistry list and from the physics list. As previously stated, a word must have occurred ten or more times in either the physics or chemistry list, or have occurred between five and ten times with frequencies in all three physics textbooks or all three chemistry textbooks before it was considered an important word.

The appearance of a word in this list is fairly good evidence that it is one of the words necessary for the pupil's understanding of the fundamental principles of the science course. An exception to this is found in the fact that many of the words that are used a great number of times in one or two of the sources have but a single occurrence in the third source. This single occurrence in the one textbook does not make it an important word as far as that one book is concerned. Examples of such words are: binding post with frequencies of 14, 1, and 22; Bunsen burner with frequencies of 1, 16, and 51; incident ray with frequencies of 14, 12, and 1.

CHAPTER III

SUMMARY

Powers expressed the hope that authors of science textbooks would consider the problem of vocabulary difficulty and, "eliminate from their writings terms which do not contribute to the accomplishment of valid and definable objectives".¹ Merely reading the prefaces of these modern textbooks makes it clear that the authors are consciously attempting to lessen vocabulary difficulties.

From this survey of recently published science textbooks it is evident that the average number of uncommon words found in physics and chemistry textbooks has been decreased. This reduction has been to the extent of 50 percent in the case of the physics books and 35 percent of the chemistry books. Such a marked decrease is worthy of commendation.

At the same time that the average number of uncommon words was being decreased, the percent of words from the composite lists appearing on the important lists was also decreased.

These facts would lead to the conclusion that a larger percent of words are now being used with greater frequencies and a less number of words are being used with low frequencies.

Thus it seems that a definite step has been taken in the direction of making our science courses better adapted to the pupil's ability to understand the terms used as well as to his practical use of the vocabulary after the course is completed.

When compared with the Powers study, this study definitely shows that the vocabulary burden in chemistry and physics has been greatly

1 Powers, *op. cit.*, p. 230.

reduced during the last decade and a half. The vocabulary burden in chemistry is about one-third greater than that in physics. In spite of the above indicated reductions, there seems to be room for further improvement as indicated by the large number of uncommon words used from one to three times.

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Typist: Davida Phillips