

A STUDY OF THE SCIENTIFIC TERMS

IN THE

ADOPTED GENERAL SCIENCE TEXTBOOK

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A STUDY OF THE SCIENTIFIC TERMS
IN THE
ADOPTED GENERAL SCIENCE TEXTBOOK

By

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SANTIA BELL BRAGG

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CHAPTER I

INTRODUCTION

It is the purpose of this study to list the scientific terms used in the adopted science textbook (1933-38), to ascertain the frequency with which they occur, and to determine if possible their relative difficulty in relation to the comprehension of ninth grade students.

Of studies in the field of sciences, those by Powers and Pressey have proved of especial significance and value. They have undoubtedly been influential in effecting improvements in textbooks and other materials for teaching science. These studies are now more than a decade old. In the interval since their publication several factors have developed which encourage the undertaking of further extensive studies of science vocabulary. First, there are new textbooks which invite analyses to determine the nature, difficulty, and other characteristics of their vocabularies. Second, there is now available the Thorndike list of twenty thousand words which is substantially different from the preceding and more reliable, and which may be assumed to be superior as a criterion of difficulty to the Thorndike ten-thousand-word list used by earlier investigators.¹

Luella Cole Pressey in her word study for science found that the pupil in any of the sciences has far too great a vocabulary to

1

Curtis, Francis D., Investigations of Vocabulary in Textbooks of Science for Secondary Schools, p. 19, 1938

master, wholly aside from the acquisition of considerable subject-matter, and that general science contains a longer list than any other subject.²

Samuel Ralph Powers states that at least 50% of the technical words used in textbooks in science are not important when judged by the criterion of usefulness in a liberal education; that the technical tasks imposed by a study of the textbooks are too large for pupils, not only because the latter do not master the tasks, but because the chances that the pupils will ever see the words again outside the textbook are small.³

Thorndike using his own vocabulary tests and The Teacher's Word Book, together with the next 10,000 most important words beyond those in The Teacher's Word Book secured results which led him to estimate the vocabulary range of the average ninth-grade pupil at 10,000 to 11,500 words.⁴

In general, many more of the words which both Junior-high-school and Senior-high-school pupils do not comprehend when reading their textbooks of science belong in the seventh thousand-word level of Thorndike's list than belong in any preceding level; therefore it is the logical starting point at which authors should begin to simplify the vocabularies of textbooks of science for high-school pupils.⁵

The material for this study was taken from the Obourn-Hess, General Science Textbook, Luella Cole Pressey's Word Study in General Science, and Thorndike Century Junior Dictionary (1935).

2

N.E.A. Department of Superintendence, The Development of the High-School Curriculum. Sixth Year Book, p. 354

3

Ibid p.355

4

Curtis, op. cit. p.38

5

Curtis, op. cit. p.57

The plan in this study is to compile and organize the scientific terms used in the science book; to compute the frequency with which they occurred; and to list what thousands the scientific terms are in according to Thorndike Dictionary.

In Thorndike's Dictionary each word has a number following it which shows its importance as measured by frequency and range of occurrence. For example 1 following the word means that the word is one of the first thousand most widely used words; 2 means that the word is one of the next most widely used thousand; 3 means that the word is in the third thousand; and so on to 20 for the twentieth thousand.

CHAPTER II

SURVEY OF SCIENTIFIC WORDS USED
IN
OBOURN-HESS GENERAL SCIENCE TEXTBOOK

Nineteen hundred forty-nine words are found in this study.

Thirty-two per cent of these words appear only one time in the science textbook. Thirty per cent of the words appearing only one time are not listed in Thorndike's Dictionary, 78 per cent of the list appear less than ten times. Samuel Ralph Powers in his study selected as the important words only those appearing at least ten times.¹

In the entire list 47.7 per cent of the words are not listed in the first ten thousand in Thorndike's Dictionary.

This word study was checked with Luella Cole Pressey's word list. One hundred seventy-seven words are used in this study that are not found in Pressey's word list. There are sixteen words in Pressey's word list not found in this study.

¹

N.E.A. Department of Superintendence. The Development of the High-School Curriculum. Sixth Year Book, p. 355

LIST OF WORDS USED IN THIS STUDY, SHOWING THEIR FREQUENCY
IN OBOURN-HESS AND THE THOUSANDS ACCORDING TO THORNDIKE

WORD	FREQUENCY	THOUSANDS
1. Acetylenel	1	15
2. acidity	1	13
3. aggregation	1	14
4. alumina	1	Not listed
5. ammeniac	1	Not listed
6. ameeba	1	15
7. amphitheater	1	14
8. amylopsin	1	Not listed
9. anaemia	1	20
10. anaerobic	1	Not listed
11. anaesthetic	1	19
12. angular	1	10
13. aniline	1	Not listed
14. annihilate	1	15
15. annoyance	1	11
16. annunciator	1	Not listed
17. appendix	1	8
18. aqua	1	Not listed
19. aqueous	1	14
20. asphyxiation	1	17
21. audio	1	Not listed
22. audion	1	Not listed
23. aurora	1	11
24. axil	1	Not listed
25. back fire	1	Not listed
26. bactericidal	1	Not listed
27. bacteriologists	1	Not listed
28. bacteriology	1	18
29. barium	1	20
30. basswood	1	19
31. befouled	1	Not listed
32. benzoate	1	Not listed
33. benzoic	1	Not listed
34. benzol	1	19
35. bicarbonate	1	17
36. bichloride	1	Not listed
37. bichromate	1	Not listed
38. bichrometer	1	Not listed
39. bifocal	1	Not listed
40. binocular	1	14
41. biologists	1	15
42. bismuth	1	14

1. Terms marked with a sign (o) appear in the Thorndike list of ten thousand words or in Power's list of scientific terms which supplements that Thorndike list; terms marked with a (-) appear among the most important terms in the Pressy "Common Science Vocabulary" and "General-Science List".

43.	bisulphid	1	Not listed
44.	blueprint	1	Not listed
45.	boracic	1	Not listed
46.	borealis	1	Not listed
47.	boric	1	11
48.	boron	1	Not listed
49.	bronchitis	1	12
50.	B. T. U.	1	Not listed
51.	burette	1	Not listed
52.	buzzer	1	Not listed
53.	caloric	1	Not listed
o+54.	calorie	1	9
55.	camel	1	Not listed
56.	carbolic	1	9
o+57.	carbonating	1	12
58.	carbonic	1	18
59.	carboniferous	1	15
60.	carborundum	1	Not listed
61.	cartesian	1	Not listed
o+62.	cartilage	1	11
63.	centrosphere	1	Not listed
64.	certify	1	10
65.	chinook	1	Not listed
66.	chloral	1	15
o 67.	choroid	1	Not listed
68.	chronic	1	10
69.	cilia	1	10
70.	cinematograph	1	Not listed
71.	cinnamon	1	10
72.	circumference	1	8
73.	cirrostratus	1	Not listed
74.	citrous	1	Not listed
75.	clinical	1	15
76.	cluster	1	3
77.	cobalt	1	16
o 78.	cochlea	1	Not listed
79.	collodian	1	Not listed
80.	commerce	1	2
81.	concentric	1	12
82.	condensite	1	Not listed
83.	conical	1	15
84.	conjunctiva	1	Not listed
85.	constitution	1	3
86.	constrict	1	18
87.	continual	1	3
88.	contrivance	1	8
89.	copious	1	7
90.	counteract	1	8
91.	cremation	1	Not listed
92.	cross breed	1	Not listed

93.	croup	1	13
94.	crystalloids	1	Not listed
95.	cupric	1	Not listed
96.	curd	1	9
97.	curvature	1	11
98.	cusps	1	20
99.	cutaneous	1	Not listed
100.	cut-off	1	Not listed
101.	datum	1	14
102.	deciduous	1	12
103.	decigram	1	Not listed
104.	decimeter	1	Not listed
105.	dependent	1	7
106.	depressant	1	Not listed
107.	designate	1	8
108.	detrimental	1	15
109.	devoid	1	12
110.	dextrine	1	Not listed
111.	dextrose	1	Not listed
112.	diagnose	1	16
o 113.	diastase	1	Not listed
114.	dietetics	1	18
115.	differentiate	1	14
116.	diffusion	1	11
117.	dike	1	12
118.	diminish	1	5
119.	discharge	1	3
120.	disfigure	1	8
121.	disintegrate	1	11
122.	dispense	1	5
o 123.	dispersion	1	13
124.	dissipate	1	9
125.	distinguish	1	3
126.	distort	1	9
127.	divide	1	1
128.	doldrums	1	Not listed
129.	duodenum	1	Not listed
130.	dysentery	1	11
131.	dyspepsia	1	12
132.	ebonite	1	Not listed
133.	ebullition	1	16
134.	eccentric	1	8
135.	electrification	1	Not listed
o 136.	electrify	1	10
o+137.	electrode	1	14
o+138.	electrolysis	1	Not listed
o+139.	electromotive	1	19
140.	electrophorous	1	Not listed
o+141.	electroplate	1	Not listed
142.	electroscope	1	Not listed
143.	electrotypes	1	18
144.	elongation	1	19
145.	emaciated	1	15

146.	embedded	1	13
147.	endolymph	1	Not listed
148.	enrich	1	5
o+149.	enzymes	1	20
o+150.	epidermis	1	9
o 151.	epiglottis	1	20
152.	epsom	1	13
153.	equatorial	1	10
154.	equilibrium	1	13
155.	equivalent	1	7
156.	eradicate	1	9
157.	errant	1	13
158.	erratic	1	18
159.	erysipelas	1	14
o+160.	esophagus	1	18
161.	essense	1	6
162.	euglena	1	Not listed
163.	eustachian	1	Not listed
164.	evolution	1	9
165.	excess	1	4
166.	excretion	1	11
167.	exeursion	1	6
168.	expectorate	1	20
169.	expend	1	8
170.	experation	1	Not listed
171.	extermination	1	11
172.	external	1	8
173.	extract	1	5
174.	exude	1	18
175.	facilitate	1	10
176.	fallow	1	9
177.	famine	1	3
178.	fedder	1	6
179.	fibre	1	19
o 180.	fibrin	1	17
181.	firebox	1	Not listed
182.	fireproof	1	12
183.	fissure	1	9
184.	flagellia	1	Not listed
185.	flagellum	1	Not listed
186.	flavor	1	4
187.	flexible	1	7
188.	flicker	1	8
189.	flint	1	5
o 190.	flora	1	9
191.	fluorine	1	Not listed
192.	fluctuation	1	9
193.	flue	1	12
194.	fluted	1	19
195.	flywheel	1	20
196.	follicle	1	14
197.	forceps	1	15
198.	forcible	1	7

199.	forge	1	4
200.	formalin	1	20
201.	fractional	1	15
202.	fragile	1	8
203.	frigid	1	9
204.	fungicide	1	Not listed
205.	gall bladder	1	Not listed
206.	geometrical	1	16
207.	German Silver	1	Not listed
208.	germicide	1	Not listed
209.	glaciate	1	Not listed
210.	goitre	1	Not listed
211.	graduate	1	4
212.	granulate	1	11
213.	granule	1	13
214.	graphite	1	10
215.	grippe	1	17
216.	ground-air	1	Not listed
217.	grub	1	8
218.	gully	1	12
219.	gyroscopic	1	Not listed
220.	helix	1	Not listed
221.	heroin	1	20
222.	hibernate	1	13
223.	hoarfrost	1	16
224.	horizontal	1	7
225.	hydrant	1	17
226.	hydration	1	Not listed
227.	hydraulic	1	Not listed
228.	hygiene	1	8
229.	hygrometer	1	11
230.	hygroscopic	1	Not listed
231.	impressible	1	8
232.	impunity	1	7
233.	incidence	1	15
234.	incinerate	1	Not listed
235.	incubate	1	Not listed
236.	indestructibility	1	17
237.	induce	1	4
238.	influenza	1	8
239.	inhabit	1	4
240.	innocuous	1	15
241.	innumerable	1	6
242.	intangible	1	15
243.	interference	1	7
244.	intermediate	1	9
245.	intermingle	1	10
246.	interpose	1	7
247.	intersection	1	15
248.	interspace	1	Not listed
249.	intervene	1	8
250.	intoxicant	1	19
251.	inversely	1	15
252.	invigorate	1	12

253.	iodide	1	20
254.	ion	1	Not listed
255.	irrigate	1	8
256.	isogonic	1	Not listed
257.	isolation	1	10
258.	javelle	1	Not listed
259.	kinematograph	1	Not listed
260.	lactate	1	Not listed
261.	lactose	1	Not listed
262.	lance	1	4
o+ 263.	larynx	1	13
264.	latent	1	8
265.	lateral	1	8
266.	lathe	1	10
267.	laudanum	1	16
268.	leaven	1	7
269.	leech	1	8
270.	leeward	1	13
271.	lentil	1	16
272.	leprosy	1	10
273.	leucocyte	1	20
274.	levulose	1	Not listed
275.	liberate	1	8
276.	lignite	1	15
277.	liter	1	14
278.	lobster	1	10
279.	location	1	4
280.	lockjaw	1	15
281.	locust	1	6
282.	lodestone	1	Not listed
283.	longevity	1	14
284.	longitudinal	1	13
285.	lowland	1	5
286.	lubricant	1	11
287.	lubricate	1	12
288.	lycopodium	1	Not listed
289.	lysol	1	Not listed
290.	machinery	1	3
291.	magarmature	1	Not listed
292.	magnetist	1	Not listed
293.	magnetite	1	Not listed
294.	magnitude	1	9
295.	mahogany	1	6
296.	malleability	1	Not listed
297.	manometer	1	Not listed
298.	marsh	1	5
299.	massive	1	7
300.	mastication	1	17
o 301.	mean annual	1	Not listed
302.	medicate	1	Not listed
303.	medicinal	1	12
304.	mesophyl	1	Not listed
305.	metallic	1	8

o	306.	metamorphosis	1	8
	307.	methane	1	Not listed
	308.	methyl	1	Not listed
	309.	metric	1	12
o+	310.	microscopic	1	8
	311.	millivolt	1	Not listed
	312.	minus	1	10
	313.	modification	1	12
	314.	molecular	1	Not listed
	315.	mollusks	1	19
	316.	monomagnet	1	Not listed
	317.	morphine	1	13
	318.	mortality	1	7
	319.	mucous	1	10
	320.	mud puppies	1	Not listed
	321.	muggy	1	18
	322.	mulberry	1	7
	323.	mulch	1	13
	324.	nauriatic	1	Not listed
	325.	marcky	1	15
	326.	myopia	1	Not listed
	327.	myriads	1	6
	328.	nasal	1	9
	329.	nausea	1	15
	330.	nectar	1	13
	331.	nervous	1	4
	332.	neuralgia	1	20
	333.	neutralize	1	8
	334.	nichrome	1	Not listed
	335.	nitrodes	1	Not listed
	336.	noxious	1	11
o+	337.	nutrition	1	8
	338.	oculist	1	15
	339.	opiate	1	13
	340.	opsonin	1	Not listed
	341.	osmotic	1	Not listed
	342.	outerop	1	Not listed
o+	343.	ovule	1	10
	344.	ozone	1	Not listed
	345.	parabolic	1	Not listed
	346.	paramecium	1	Not listed
	347.	parasite	1	7
	348.	parchment	1	7
	349.	paregoric	1	Not listed
	350.	Paris Green	1	Not listed
	351.	partial	1	5
	352.	partition	1	7
	353.	pathogenic	1	Not listed
	354.	pennant	1	18
	355.	penumbra	1	Not listed
	356.	peptones	1	17

357.	perception	1	8
358.	percolate	1	15
359.	perforation	1	16
360.	periscope	1	Not listed
361.	permeable	1	20
362.	permeate	1	12
363.	perpetuate	1	10
364.	persistence	1	10
365.	perspective	1	9
o+366.	pharynx	1	12
367.	phlegm	1	16
368.	photographic	1	11
369.	photometer	1	Not listed
o+370.	physicist	1	17
o+371.	physiology	1	10
372.	planetary	1	13
o+373.	plasma	1	10
374.	plastic	1	10
375.	plateau	1	5
376.	pleura	1	Not listed
377.	pleurisy	1	19
378.	pliable	1	16
379.	pliers	1	12
380.	pneumatic	1	12
381.	pock	1	Not listed
382.	polarize	1	Not listed
383.	portable	1	9
384.	potash	1	12
o+385.	potential	1	9
386.	prairie	1	5
387.	predisposing	1	16
388.	predominate	1	10
389.	primary	1	5
390.	prismatic	1	12
391.	prostration	1	19
392.	proteid	1	Not listed
393.	protude	1	9
394.	protuberance	1	15
395.	prussic	1	Not listed
396.	ptomaine	1	19
o+ 397.	ptyalin	1	Not listed
398.	pulmonary	1	11
399.	pulverize	1	11
400.	pumice	1	13
401.	purity	1	5
402.	putrefaction	1	16
403.	putty	1	11
404.	pylorus	1	Not listed
405.	quadrant	1	14
406.	quadruplex	1	Not listed
407.	quinine	1	8
408.	rabies	1	11

409.	rancid	1	17
410.	rarefaction	1	Not listed
411.	rarefied	1	Not listed
412.	ration	1	7
413.	reaction	1	9
414.	rebound	1	12
415.	receptacle	1	7
416.	rectum	1	17
417.	recurrence	1	14
418.	redwood	1	14
419.	reflectoscope	1	Not listed
o+420.	reflex	1	9
421.	relaxation	1	10
422.	remnant	1	4
423.	render	1	2
424.	remnet	1	Not listed
425.	renovate	1	13
426.	replenish	1	7
427.	reserve	1	3
o+428.	residue	1	10
429.	resistor	1	Not listed
430.	resonance	1	17
431.	restorative	1	13
432.	restriction	1	8
433.	resuscitate	1	19
434.	retain	1	3
435.	retort	1	9
436.	revert	1	8
437.	rheostat	1	17
438.	rudders	1	9
439.	rye	1	4
440.	salicylic	1	Not listed
441.	sal soda	1	Not listed
442.	salt petre	1	11
443.	sap	1	19
+444.	saprophyte	1	Not listed
445.	sapwood	1	Not listed
446.	scab	1	12
447.	savage	1	2
448.	scar	1	4
449.	scarlet fever	1	3
450.	scientific	1	7
451.	sclerotic	1	Not listed
452.	scourge	1	4
453.	scrofula	1	Not listed
454.	scum	1	10
o+455.	secretion	1	8
456.	sedentary	1	9
457.	segment	1	7
458.	semaphore	1	Not listed
459.	semicircular	1	13
460.	sensible heat	1	Not listed

461.	separator	1	12
o+462.	serum	1	11
463.	sever	1	5
464.	sextant	1	Not listed
465.	shellac	1	13
466.	shuttle	1	11
o+467.	silica	1	15
468.	silicate	1	15
469.	silicon	1	19
470.	simultaneous	1	9
471.	sirup	1	10
472.	solder	1	9
473.	solidification	1	Not listed
474.	solidified	1	13
475.	sonometer	1	Not listed
476.	sorus	1	Not listed
477.	spheroid	1	19
478.	spinal	1	8
479.	spirogyra	1	Not listed
480.	spirometer	1	Not listed
481.	spleen	1	6
482.	splinter	1	7
483.	spongy	1	9
484.	sporangia	1	Not listed
485.	sprocket	1	16
486.	sprout	1	6
487.	spud	1	20
488.	spurt	1	12
489.	squall	1	9
490.	stalk	1	4
491.	stance	1	Not listed
492.	standardize	1	13
493.	steapsin	1	19
494.	stereoptican	1	Not listed
o+495.	stimulant	1	7
496.	stimulation	1	12
o+497.	stimulus	1	8
498.	stoker	1	19
499.	stoma	1	17
500.	stormoguide	1	Not listed
501.	streptococcus	1	Not listed
502.	substratum	1	12
503.	sucrose	1	Not listed
504.	sulphide	1	Not listed
505.	sulphite	1	Not listed
506.	summit	1	5
507.	sunstroke	1	18
508.	supercooled	1	Not listed
509.	supersede	1	14
510.	susceptible	1	8
511.	sustain	1	4

512.	swamp	1	4
513.	swarming	1	3
514.	symbol	1	4
515.	symmetry	1	11
516.	sympathetic	1	8
o 517.	synthesis	1	11
518.	synthetic	1	11
519.	table-land	1	17
520.	taint	1	6
521.	talc	1	20
522.	tallow	1	8
523.	tangent	1	16
524.	tankage	1	Not listed
525.	tapeworm	1	11
526.	taut	1	18
527.	tenacity	1	6
528.	tentacle	1	12
529.	tetanus	1	13
530.	terra-cotta	1	13
o 531.	terrestrial	1	11
532.	thaw	1	5
533.	theological	1	9
o+ 534.	thermal	1	15
535.	thermos	1	17
536.	thistle	1	4
o+ 537.	tidal	1	Not listed
538.	tillable	1	Not listed
539.	tines	1	Not listed
540.	tobacco	1	3
541.	tong	1	5
542.	tonic	1	9
543.	tonsillitis	1	19
o+ 544.	trachea	1	11
545.	trachina	1	Not listed
546.	tract	1	4
547.	trades	1	1
548.	transverse	1	11
549.	treadle	1	20
550.	tremule	1	Not listed
551.	triangular	1	10
552.	tribe	1	2
553.	tributary	1	4
554.	trichina	1	Not listed
o 555.	trypsin	1	19
556.	tuber	1	10
557.	tubercle	1	15
558.	tubular	1	11
559.	tufts	1	6
560.	tumor	1	11
561.	tunic	1	10
562.	turpentine	1	7
563.	tympanic	1	18

564.	ulcerate	1	20
565.	ultimate	1	7
566.	umbra	1	Not listed
567.	undergo	1	5
568.	underweight	1	Not listed
569.	undulating	1	Not listed
570.	unwholesome	1	8
571.	upright	1	3
572.	uric	1	Not listed
573.	urine	1	10
574.	utensil	1	7
575.	utilize	1	8
576.	utricle	1	Not listed
577.	vaccines	1	15
o 578.	vacuole	1	Not listed
579.	vagus	1	Not listed
580.	vaporization	1	Not listed
581.	varicose	1	Not listed
582.	varnish	1	6
583.	vaseline	1	13
584.	vat	1	9
585.	vegetarian	1	18
of 586.	vegetation	1	7
587.	veneer	1	11
o 588.	ventricle	1	9
589.	vermiform	1	14
590.	vestibule	1	11
591.	vetches	1	17
592.	veterinarian	1	Not listed
593.	vial	1	10
594.	vicinity	1	6
595.	virtual	1	9
596.	virulent	1	15
597.	virus	1	17
598.	visible	1	4
599.	vital	1	5
600.	vitality	1	9
601.	vitriol	1	12
602.	void	1	4
of 603.	volatile	1	10
604.	verticella	1	Not listed
of 605.	voluntary	1	6
606.	vortex	1	15
607.	wad	1	13
608.	water-glass	1	Not listed
609.	water plane	1	Not listed
610.	waterways	1	10
611.	weevil	1	11
612.	wharf	1	8
613.	whey	1	10

614.	whirlwind	1	5
615.	wigglers	1	Not listed
616.	windlass	1	19
617.	wrought iron	1	Not listed
618.	xerophyte	1	Not listed
619.	x-ray	1	19
620.	yard	1	1
621.	yellow fever	1	Not listed
622.	zenith	1	8
623.	zonite	1	Not listed
624.	abrasion	2	Not listed
625.	acetic	2	13
626.	accentuate	2	13
627.	acclimatize	2	20
628.	acidulate	2	Not listed
629.	activated	2	Not listed
630.	addict	2	16
631.	aerobic	2	Not listed
632.	agate	2	12
633.	agonic	2	Not listed
634.	alkaline	2	9
635.	alligator	2	7
636.	ammeter	2	Not listed
of 637.	amorphous	2	18
638.	anemometer	2	Not listed
639.	anthracite	2	9
640.	anthrax	2	17
641.	antimony	2	20
642.	aperture	2	8
643.	articulate	2	8
644.	ascertain	2	7
645.	auditory	2	12
646.	bacterial	2	17
647.	bacteriological	2	Not listed
648.	baffle	2	7
649.	barberry	2	17
650.	barometric	2	Not listed
651.	beats	2	6
652.	beeswax	2	17
653.	biconvex	2	Not listed
654.	biplane	2	Not listed
655.	bituminous	2	8
656.	blight	2	7
657.	blindspot	2	Not listed
658.	blowpipe	2	19
659.	boa-constrictor	2	Not listed
660.	boiling point	2	Not listed
661.	borax	2	10
662.	boundary	2	3
663.	brilliance	2	14
664.	brimstone	2	Not listed
665.	broil	2	9
666.	bronchial	2	8
667.	cactus	2	11
668.	camphor	2	6

669.	canker	2	8
670.	carbuncle	2	11
671.	cardinal	2	6
672.	cascade	2	6
673.	casein	2	14
674.	casing	2	13
675.	cathode	2	Not listed
o 676.	celestial	2	4
o+677.	cellulose	2	9
+678.	centrifugal	2	13
679.	cerium	2	Not listed
680.	chaff	2	Not listed
681.	charge	2	Not listed
682.	chlorate	2	Not listed
683.	chromium	2	12
684.	chronometer	2	Not listed
685.	churning	2	Not listed
686.	ciliary	2	Not listed
687.	clinker	2	13
688.	coating	2	14
689.	cog	2	2
690.	coke	2	15
691.	colony	2	13
692.	coloration	2	5
693.	communicable	2	9
694.	compact	2	7
695.	compensate	2	7
696.	complement	2	8
697.	congeal	2	11
698.	continental	2	14
699.	corrosive	2	Not listed
700.	counterbalance	2	5
o+701.	counterclockwise	2	13
702.	craft	2	7
703.	cresote	2	2
704.	crescent	2	Not listed
705.	crop	2	Not listed
706.	cumulo-nimbus	2	13
707.	cumulus	2	Not listed
708.	cylindrical	2	Not listed
709.	dehydration	2	12
710.	demagnetize	2	4
711.	deposition	2	3
712.	derive	2	10
713.	destructive	2	6
714.	devastate	2	15
715.	dipper	2	9
+716.	dislocation	2	7
717.	diverging	2	3
718.	divert	2	6
719.	domestic	2	17
720.	dough	2	9

721.	droplet	2	17
722.	dune	2	9
723.	duplex	2	18
724.	duralumin	2	Not listed
725.	duration	2	9
726.	ebony	2	8
727.	elastic	2	5
728.	elimination	2	13
o-729.	embryo	2	7
730.	equation	2	8
o-731.	eruption	2	9
732.	excavate	2	11
733.	extinct	2	7
734.	factory	2	3
o 735.	fission	2	Not listed
736.	fleecy	2	7
737.	flushing	2	8
738.	foliage	2	6
739.	formaldehyde	2	12
740.	fumigation	2	16
o 741.	fusibility	2	Not listed
o- 742.	fusion	2	9
743.	galena	2	20
744.	galvanized	2	13
745.	ground-water	2	Not listed
746.	gunpowder	2	6
747.	gyro	2	Not listed
748.	habitable	2	10
o- 749.	haemoglobin	2	Not listed
750.	hail	2	2
751.	halo	2	15
752.	hatchery	2	17
753.	hemp	2	9
754.	hieroglyphics	2	Not listed
755.	humidifiers	2	Not listed
756.	hydroelectric	2	Not listed
757.	hydrophyte	2	Not listed
758.	hydroplane	2	Not listed
759.	hygrodeik	2	Not listed
760.	ignition	2	13
761.	illusion	2	7
762.	immerse	2	10
763.	immortal	2	3
764.	impair	2	7
765.	impulses	2	7
766.	inaminate	2	9
767.	infested	2	8
768.	infinity	2	14
769.	inflate	2	10
770.	inland	2	5
771.	inlet	2	9
772.	insomnia	2	13
o- 773.	involuntary	2	7
774.	irritate	2	7
775.	jack screw	2	Not listed

776.	kangaroo	2	13
777.	kidney	2	7
778.	krypton	2	Not listed
779.	lachrymal	2	19
780.	lavatory	2	14
781.	laxative	2	13
782.	leyden jar	2	Not listed
o 783.	lichen	2	9
o 784.	ligament	2	14
785.	linseed	2	8
786.	liquor	2	4
787.	lithosphere	2	Not listed
o+788.	litmus	2	17
789.	maltose	2	Not listed
790.	measles	2	10
791.	meniscus	2	Not listed
792.	mercuric	2	Not listed
793.	meteorological	2	16
794.	mica	2	11
o+795.	micro-organism	2	Not listed
796.	mildew	2	8
797.	milligram	2	Not listed
798.	minature	2	8
799.	mirage	2	16
800.	monoplane	2	Not listed
801.	naphtha	2	14
802.	nitrifying	2	Not listed
803.	nitroglycerine	2	Not listed
804.	nozzle	2	11
805.	obnoxious	2	10
806.	octave	2	15
807.	outlet	2	4
808.	overcast	2	10
809.	overshot	2	9
810.	palpitate	2	18
o+811.	pancreas	2	10
812.	pancreatic	2	14
813.	parachute	2	12
814.	paraffine	2	10
815.	passage	2	3
816.	pilot	2	6
817.	planisphere	2	Not listed
818.	plunger	2	18
819.	pollution	2	8
820.	porosity	2	20
821.	progenitor	2	9
822.	pungent	2	14
823.	quarantine	2	10
824.	quartz	2	13
825.	race	2	1
826.	railroad	2	2
827.	rapids	2	1

828.	reclamation	2	13
829.	reptile	2	8
830.	repulsion	2	19
o+831.	residual	2	19
832.	rigor	2	6
833.	rotunda	2	Not listed
834.	sediment	2	10
835.	seismography	2	Not listed
836.	shower	2	2
837.	siren	2	8
838.	sirocco	2	16
839.	sludge	2	16
840.	solstice	2	15
841.	soot	2	9
o+842.	species	2	7
843.	specific gravity	2	Not listed
o+844.	static	2	14
845.	stationary	2	7
846.	sublimation	2	Not listed
847.	subterranean	2	11
848.	sultry	2	9
849.	symptom	2	8
850.	tapioca	2	18
851.	tension	2	12
852.	thermostat	2	Not listed
853.	thorium	2	Not listed
854.	torrid	2	8
855.	vane	2	8
o 856.	vaporize	2	17
857.	variable	2	Not listed
858.	vault	2	4
859.	veer	2	10
860.	vent	2	6
861.	vernal	2	11
862.	violence	2	3
863.	vitreous	2	17
864.	vocal	2	6
865.	voltmeter	2	19
866.	waterspout	2	18
867.	welsbach	2	Not listed
868.	xenon	2	Not listed
869.	acetate	3	Not listed
870.	adjust	3	6
871.	adrenalin	3	Not listed
872.	adulterant	3	12
873.	affinity	3	9
874.	aileron	3	Not listed
875.	albumin	3	15

o+	876.	algae	3	10
	877.	altimeter	3	Not listed
o	878.	amphibian	3	13
	879.	analyze	3	7
	880.	anode	3	Not listed
	881.	antiseptic	3	11
o	882.	aorta	3	14
	883.	appendicitis	3	12
	884.	argon	3	20
	885.	arid	3	11
	886.	arsenic	3	11
	887.	artesian	3	12
+	888.	astigmatism	3	Not listed
	889.	atomic	3	11
	890.	attribute	3	5
	891.	ball bearing	3	Not listed
	892.	bellows	3	17
	893.	benzine	3	12
	894.	bicuspid	3	Not listed
o+	895.	bile	3	12
	896.	biological	3	9
	897.	bleach	3	6
	898.	blizzard	3	11
	899.	bore	3	2
o+	900.	botany	3	10
	901.	bowels	3	4
	902.	brittleness	3	8
	903.	bromide	3	13
	904.	bronze	3	6
	905.	bubonic	3	13
	906.	burrow	3	7
	907.	cadmium	3	Not listed
	908.	calculations	3	10
	909.	canine	3	7
o+	911.	carbonate	3	10
o+	912.	carnivorous	3	12
	913.	cast iron	3	11
	914.	castor	3	Not listed
	915.	cataract	3	11
	916.	caucasian	3	6
	917.	celluloid	3	15
	918.	centigram	3	13
	919.	channel	3	13
	920.	charcoal	3	3
o	921.	chemist	3	8
o+	922.	chemistry	3	8
	923.	chicory	3	17
	924.	chloroform	3	11
	925.	cholera	3	8
	926.	cilia	3	10
	927.	cistern	3	6
	928.	clockwise	3	Not listed
	929.	coagulation	3	20
o+	930.	cohesion	3	16

931.	commodity	3	7
932.	comparative	3	5
933.	compute	3	8
934.	conservation	3	7
935.	constant	3	2
936.	consumption	3	6
937.	contaminated	3	8
938.	contraction	3	8
939.	convalescent	3	13
940.	converging	3	12
o+941.	cornea	3	13
o+942.	corolla	3	11
943.	corrode	3	9
944.	cowpox	3	Not listed
945.	crevice	3	8
946.	culex	3	Not listed
947.	culture	3	6
o+948.	declination	3	15
949.	deficient	3	8
o 950.	depression	3	Not listed
951.	dentine	3	7
952.	descendent	3	7
953.	diabetes	3	13
954.	dimension	3	7
955.	dissection	3	13
956.	divining rod	3	Not listed
957.	drugs	3	3
958.	ductile	3	16
959.	earthworm	3	8
960.	enclose	3	3
961.	eugenics	3	Not listed
962.	eye ball	3	10
o+963.	fermentation	3	8
964.	gale	3	4
965.	galvanic	3	17
966.	gastric	3	9
967.	gauze	3	8
o+968.	genus	3	11
969.	geographical	3	8
970.	geologists	3	16
o 971.	geology	3	10
972.	gills	3	7
973.	gorge	3	6
974.	grafting	3	8
o 975.	gullet	3	11
976.	gypsum	3	20
977.	hallstone	3	12
978.	hardwood	3	14
979.	harmonics	3	13
980.	hemorrhage	3	18
981.	herbivorous	3	Not listed

	982.	hereditary	3	8
o+	983.	hoemoglobin	3	Not listed
	984.	horizon	3	4
o+	985.	host	3	2
	986.	humid	3	14
	987.	humor	3	3
	988.	hybrid	3	8
	989.	hydrocarbon	3	Not listed
	990.	hydrometer	3	11
	991.	hydrosphere	3	Not listed
	992.	hypothesis	3	11
	993.	imbedded	3	15
	994.	impenetrability	3	Not listed
	995.	impervious	3	9
	996.	inbreed	3	20
	997.	inclination	3	7
	998.	inert	3	8
	999.	infiltration	3	Not listed
o+	1000.	inflammable	3	13
o+	1001.	inhale	3	10
	1002.	inject	3	8
	1003.	injury	3	4
	1004.	inoculate	3	13
o+	1005.	inorganic	3	12
	1006.	inspiration	3	5
	1007.	insulate	3	11
	1008.	internal	3	5
o+	1009.	invertebrate	3	13
	1010.	isobar	3	Not listed
	1011.	jacket	3	5
	1012.	jute	3	11
	1013.	kilocycle	3	Not listed
	1014.	knot	3	3
o+	1015.	liquefy	3	20
	1016.	lukewarm	3	11
	1017.	maggots	3	8
	1018.	magnesium	3	16
o	1019.	magnetized	3	19
	1020.	malt	3	10
o+	1021.	mammal	3	8
o+	1022.	manganese	3	19
	1023.	mathematical	3	11
	1024.	maximum	3	9
	1025.	mazda	3	Not listed
	1026.	medicine	3	2
	1027.	medullary	3	15
	1028.	meningitis	3	13
+	1029.	metabolism	3	15
	1030.	microbe	3	12
o+	1031.	migrate	3	7
	1032.	minimum	3	8
	1033.	monsoons	3	18
	1034.	narcotic	3	8

1035.	navigation	3	7
1036.	neon	3	Not listed
1037.	nimbus	3	Not listed
1038.	nitric	3	15
1039.	non-luminous	3	Not listed
1040.	non-metallic	3	Not listed
1041.	non-volatile	3	Not listed
1042.	oblate	3	Not listed
1043.	opaque	3	9
1044.	osmometer	3	Not listed
1045.	overtone	3	6
1046.	peat	3	Not listed
1047.	pericardium	3	Not listed
o+1048.	perspiration	3	11
o+1049.	petroleum	3	6
o+1050.	photosynthesis	3	Not listed
1051.	pith	3	8
1052.	pivot	3	8
1053.	platinum	3	10
1054.	pneumonia	3	9
1055.	pollination	3	17
1056.	pore	3	6
1057.	prehistoric	3	12
1058.	proboscis	3	12
o+1059.	protozoa	3	Not listed
1060.	psychrometer	3	Not listed
1061.	pulp	3	7
1062.	pulse	3	4
1063.	rainbow	3	3
1064.	ratio	3	7
1065.	reenforce	3	20
1066.	remedy	3	3
1067.	resin	3	10
o+1068.	rotary	3	7
1069.	sac	3	11
o+1070.	salts	3	1
o+1071.	satellite	3	12
1072.	scurvy	3	10
1073.	sewer	3	7
1074.	sexual	3	8
1075.	shrink	3	5
1076.	slope	3	2
1077.	smolder	3	18
1078.	spontaneous	3	8
1079.	spout	3	6
1080.	standpipe	3	Not listed
1081.	stratus	3	Not listed
1082.	style	3	2
1083.	substitute	3	4
1084.	suction	3	10

1085.	superficial	3	
1086.	syrup	3	9
1087.	tartar	3	6
1088.	tendency	3	10
1089.	textile	3	6
1090.	thorax	3	10
1091.	transfer	3	11
1092.	transformation	3	4
1093.	undershot	3	8
1094.	villi	3	Not listed
1095.	westerlies	3	Not listed
1096.	abscess	4	18
1097.	absorption	4	16
1098.	adjacent	4	7
1099.	alkali	4	7
of 1100.	alum	4	10
1101.	amber	4	18
1102.	anopheles	4	5
1103.	anther	4	Not listed
1104.	anticyclone	4	8
1105.	approximate	4	Not listed
1106.	aromatic	4	7
1107.	asphalt	4	8
of 1108.	atom	4	8
1109.	audible	4	8
1110.	auricle	4	13
1111.	autogyre	4	Not listed
1112.	aviation	4	15
1113.	barograph	4	Not listed
1114.	barrier	4	5
1115.	calorimeter	4	Not listed
1116.	canyon	4	10
1117.	carpel	4	14
1118.	catarrh	4	10
1119.	cirrus	4	Not listed
1120.	citric	4	Not listed
1121.	coccus	4	Not listed
1122.	conduction	4	18
of 1123.	constituents	4	9
1124.	contagious	4	8
1125.	decimal	4	12
1126.	decomposition	4	13
1127.	deflect	4	14
1128.	delta	4	6
1129.	denature	4	Not listed
1130.	dilute	4	11
1131.	diphtheria	4	9
1132.	disc	4	9
1133.	disulphide	4	Not listed
1134.	diver	4	9
1135.	docks	4	4

o	1136.	dominant	4	7
	1137.	drone	4	7
	1138.	duct	4	11
	1139.	dye	4	4
	1140.	ebb	4	6
	1141.	echo	4	2
	1142.	eddy	4	7
	1143.	epidermic	4	9
	1144.	equinox	4	14
o+	1145.	exhaled	4	8
	1146.	fixture	4	7
	1147.	fluid	4	4
	1148.	globule	4	12
o+	1149.	glucose	4	16
	1150.	gluten	4	12
o	1151.	glycogen	4	Not listed
	1152.	gout	4	10
	1153.	graph	4	18
	1154.	hemisphere	4	6
	1155.	heterogenous	4	10
	1156.	homogeneous	4	14
	1157.	hookworm	4	13
o+	1158.	hydrochloric	4	13
	1159.	hydrophobia	4	13
	1160.	hypha	4	15
	1161.	iceberg	4	Not listed
	1162.	incision	4	9
	1163.	indigestion	4	14
o+	1164.	inertia	4	9
	1165.	infection	4	15
o+	1166.	inflammation	4	9
o+	1167.	inherit	4	10
	1168.	install	4	4
	1169.	interval	4	5
	1170.	isotherm	4	5
o+	1171.	kinetic	4	20
	1172.	lactic	4	20
	1173.	legumen	4	Not listed
	1174.	loam	4	17
	1175.	luxuriant	4	Not listed
	1176.	millimeter	4	11
	1177.	modulated	4	8
	1178.	monoxide	4	19
	1179.	nebular	4	12
	1180.	nitro-cellulose	4	17
	1181.	nourishment	4	Not listed
	1182.	oblique	4	Not listed
	1183.	oesophagus	4	6
	1184.	opium	4	9
	1185.	orient	4	18
	1186.	osmosis	4	7
+	1187.	overestimate	4	5
				10

1188.	overflow	4	Not listed
1189.	oxalic	4	17
1190.	per capita	4	14
1191.	permanganate	4	6
1192.	petal	4	6
1193.	pier	4	4
1194.	pillar	4	6
1195.	preliminary	4	9
1196.	preventive	4	7
1197.	prohibition	4	10
1198.	propagation	4	2
1199.	properties	4	2
of 1200.	quality	4	Not listed
1201.	rain-gage	4	3
1202.	refine	4	3
1203.	register	4	Not listed
1204.	regurgitate	4	7
1205.	rheumatism	4	7
1206.	rivulet	4	7
1207.	rollers	4	5
1208.	saccharine	4	Not listed
1209.	sanitary	4	6
1210.	secrete	4	10
of 1211.	sepals	4	10
1212.	slant	4	4
1213.	smut	4	12
1214.	socket	4	6
1215.	sterile	4	10
1216.	stirrup	4	6
1217.	stratified	4	18
1218.	subsoil	4	16
1219.	surplus	4	7
1220.	suspension	4	9
1221.	terminal	4	13
1222.	theory	4	5
1223.	ton	4	3
1224.	tuberculosis	4	11
1225.	typhoon	4	16
1226.	unsanitary	4	Not listed
1227.	vertebrate	4	Not listed
1228.	vision	4	10
1229.	voltaic	4	3
1230.	yield	4	Not listed
1231.	abundant	5	2
1232.	accessory	5	3
1233.	accomplish	5	10
1234.	accumulation	5	2
1235.	adenoids	5	11
1236.	alfalfa	5	14
+1237.	alluvial	5	7
1238.	antitrades	5	12
1239.	anvil	5	Not listed
1240.	apparent	5	6
1241.	appliance	5	4
1242.	aquarium	5	9
			12

1243.	arc	5	7
1244.	arctic	5	7
1245.	ascend	5	3
1246.	astronomical	5	12
1247.	bacilli	5	10
1248.	bladder	5	9
1249.	bog	5	5
1250.	breeze	5	3
1251.	brine	5	9
1252.	bunsen	5	Not listed
1253.	caffeine	5	14
1254.	calyx	5	10
1255.	cambium	5	10
1256.	capricorn	5	12
1257.	cesspool	5	17
1258.	chassis	5	13
1259.	chloride	5	15
o+1260.	chlorophyll	5	13
1261.	climatic	5	9
1262.	compartment	5	13
o 1263.	condenser	5	10
1264.	conglomerate	5	7
1265.	conserve	5	19
1266.	constipation	5	8
1267.	crystalline	5	12
1268.	cultivate	5	12
+1269.	decompose	5	3
1270.	deforestation	5	8
1271.	descend	5	Not listed
1272.	diarrhea	5	2
1273.	dormant	5	13
1274.	dynamite	5	11
1275.	effervescence	5	10
1276.	exposure	5	16
1277.	formation	5	8
1278.	glaze	5	6
1279.	gradient	5	7
1280.	gyroscope	5	Not listed
1281.	heliographs	5	Not listed
1282.	horse latitude	5	Not listed
1283.	individuality	5	9
o+1284.	iris	5	6
o+1285.	lava	5	9
o+1286.	longitude	5	7
1287.	mature	5	4
o+1288.	membrane	5	7
1289.	method	5	3
1290.	microphone	5	Not listed
1291.	molten	5	6
1292.	moss	5	3
1293.	multiplication	5	7
1294.	naval	5	Not listed
1295.	neap	5	13
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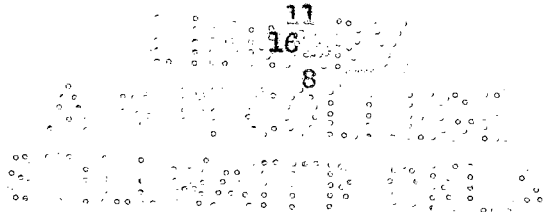
1296.	node	5	13
1297.	nodules	5	15
1298.	nostrum	5	15
1299.	oleomargarine	5	16
o+1300.	optical	5	11
o+1301.	ore	5	10
1302.	orifice	5	10
1303.	overweight	5	13
o 1304.	pepsin	5	14
1305.	perishable	5	14
1306.	pigment	5	8
1307.	plumbing	5	11
1308.	pluto	5	10
1309.	poison	5	3
1310.	polaris	5	Not listed
1311.	preservation	5	12
1312.	propellor	5	18
1313.	quantity	5	2
1314.	reflection	5	5
1315.	refractor	5	Not listed
1316.	refrigeration	5	14
1317.	respective	5	14
1318.	retard	5	8
1319.	salamander	5	8
1320.	sal amoniac	5	Not listed
1321.	salivary	5	13
1322.	seepage	5	20
1323.	sensation	5	7
1324.	simmer	5	11
1325.	smelt	5	6
1326.	soapstone	5	19
1327.	sodium	5	11
1328.	sphere	5	3
1329.	stagnant	5	7
1330.	temperate	5	3
1331.	translucent	5	9
1332.	tuning	5	3
o+1333.	veins	5	3
1334.	wedge	5	5
1335.	yeast	5	7
1336.	zero	5	5
o+1337.	adhere	6	8
1338.	aeration	6	19
1339.	ailment	6	8
1340.	appendage	6	9
1341.	arbitrary	6	8
1342.	asbestos	6	11
1343.	assimilated	6	8
1344.	astrologers	6	15
1345.	beverage	6	7
1346.	capsule	6	11
1347.	cocoon	6	10
o+1348.	composition	6	4
1349.	consume	6	4
1350.	core	6	Not listed
+1351.	crater	6	13
1352.	damper	6	14
		6	14

1353.	drouth	6	14
1354.	edible	6	8
1355.	elapse	6	5
1356.	enamel	6	6
1357.	extinguish	6	6
1358.	geletin	6	10
1359.	germination	6	11
1360.	gauge	6	9
o1361.	helium	6	19
o+1362.	horse power	6	12
o+1363.	induction	6	13
1364.	kilogram	6	10
o+1365.	liver	6	4
1366.	luminous	6	7
1367.	mantle	6	3
1368.	manure	6	6
1369.	minute	6	1
1370.	numerical	6	12
1371.	observatory	6	12
1372.	organization	6	5
1373.	perpendicular	6	8
1374.	petiole	6	5
1375.	petri	6	8
1376.	phosphates	6	Not listed
1377.	pointer	6	Not listed
1378.	polluted	6	7
1379.	predicting	6	7
1380.	projection	6	16
o+1381.	radiant	6	7
1382.	rigid	6	7
1383.	saturated	6	8
1384.	senses	6	5
1385.	septic	6	7
1386.	shale	6	11
1387.	shutter	6	2
1388.	site	6	19
1389.	smallpox	6	10
1390.	soluble	6	6
1391.	sputum	6	9
1392.	treatment	6	6
1393.	tropical	6	20
o+1394.	velocity	6	20
1395.	ventilate	6	3
1396.	vertical	6	7
1397.	water table	6	9
1398.	absolute	7	9
1399.	aeroplane	7	6
o+1400.	alloy	7	Not listed
1401.	ammonium	7	2
1402.	assumption	7	Not listed
o+1403.	astronomy	7	13
1404.	astrology	7	14
1405.	aviator	7	8
			12
			15
			14

1406.	beaker	7	13
1407.	chemically	7	Not listed
1408.	compressor	7	Not listed
1409.	concentrate	7	7
1410.	disinfectant	7	13
1411.	displacement	7	20
1412.	disturbance	7	6
o+1413.	dynamo	7	11
1414.	filings	7	19
1415.	flax	7	4
o+1416.	function	7	5
1417.	garbage	7	9
o 1418.	heart	7	1
1419.	helicopter	7	Not listed
1420.	muscular	7	7
o 1421.	nerve	7	4
1422.	organic	7	7
o+1423.	oxide	7	13
1424.	peroxide	7	13
1425.	pioneer	7	5
1426.	planetoid	7	Not listed
1427.	porcelain	7	7
1428.	porous	7	10
o+1429.	precipitate	7	7
o+1430.	refraction	7	18
1431.	regulate	7	5
o+1432.	saliva	7	8
1433.	seed	7	1
1434.	selection	7	6
1435.	semi-indirect	7	Not listed
o 1436.	spectroscope	7	17
o+1437.	strata	7	13
1438.	submerge	7	7
1439.	sulphuric	7	17
o+1440.	transparent	7	7
1441.	variation	7	10
o+1442.	volcano	7	7
o+1443.	abnormal	8	9
1444.	alimentary	8	13
1445.	ancestor	8	4
1446.	atomizer	8	17
o 1447.	biology	8	7
o+1448.	buoyancy	8	14
o+1449.	centimeter	8	9
o+1450.	combustible	8	14
o 1451.	compression	8	14
o+1452.	concave	8	7
1453.	cyclone	8	14
1454.	drill	8	2
o+1455.	expansion	8	7
1456.	figure	8	1

Not listed
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1457.	illuminant	8	
1458.	insulator	8	
1459.	lunar	8	
1460.	macadam	8	
1461.	malaria	8	
1462.	marble	8	
1463.	nickel	8	
1464.	origin	8	
1465.	polarity	8	Not listed
1466.	prism	8	7
1467.	propel	8	9
1468.	proportion	8	3
1469.	rot	8	6
1470.	rural	8	3
1471.	seasonal	8	16
o+ 1472.	spherical	8	11
1473.	tropics	8	6
1474.	tungsten	8	14
1475.	wool	8	2
1476.	adult	9	Not listed
1477.	agar	9	13
1478.	antenna	9	7
1479.	appropriate	9	Not listed
+ 1480.	asterioids	9	4
1481.	capacity	9	3
1482.	commercial	9	9
o+ 1483.	corpuscle	9	9
1484.	cycle	9	10
1485.	data	9	11
1486.	electrician	9	9
1487.	emulsion	9	9
1488.	Fehling	9	Not listed
1489.	fertile	9	4
o+ 1490.	fertilize	9	6
1491.	funnel	9	12
o+ 1492.	gland	9	10
1493.	gram	9	12
1494.	intestines	9	9
1495.	invert	9	6
1496.	mechanism	9	8
o 1497.	meteorite	9	Not listed
o+ 1498.	nucleus	9	7
o+ 1499.	ovary	9	8
1500.	pasteurized	9	14
1501.	penetrate	9	13
1502.	percentage	9	9
o 1503.	phase	9	10
1504.	pollen	9	10
1505.	prevailing	9	3
o+ 1506.	protoplasm	9	8
1507.	pupa	9	8
1508.	radiate	9	11
o+ 1509.	radiation	9	16
1510.	radius	9	8



1511.	refrigerator	9	9
†1512.	respiration	9	14
o†1513.	solvent	9	13
1514.	spirillum	9	Not listed
1515.	uramus	9	Not listed
o†1516.	abdomen	10	9
1517.	accommodation	10	6
o†1518.	adhesion	10	12
1519.	antitoxins	10	8
1520.	automatic	10	7
1521.	bulletin	10	7
o†1522.	Calorie	10	Not listed
o†1523.	capillarity	10	8
o 1524.	circulation	10	7
1525.	code	10	8
o†1526.	condensation	10	9
1527.	conduit	10	9
1528.	denote	10	7
1529.	diffuse	10	5
1530.	exert	10	8
1531.	fog	10	4
o†1532.	fungi	10	14
1533.	incandescent	10	15
1534.	latitude	10	7
1535.	local	10	3
1536.	lore	10	10
1537.	magnify	10	5
1538.	neptune	10	11
o†1539.	nitrates	10	10
1540.	sporns	10	9
1541.	stigma	10	8
o†1542.	artery	11	7
o 1543.	attraction	11	5
1544.	cavity	11	7
1545.	cereal	11	8
1546.	contract	11	3
o†1547.	density	11	9
1548.	depth	11	3
o 1549.	distilled	11	6
1550.	flood	11	2
1551.	insoluble	11	9
1552.	jet	11	5
1553.	juice	11	4
1554.	laboratories	11	8
1555.	magneto	11	12
1556.	offspring	11	Not listed
1557.	optic	11	9
1558.	phenomenon	11	7
1559.	photo	11	10
1560.	protens	11	Not listed
1561.	purification	11	10
1562.	repel	11	7
1563.	rust	11	3

1564.	soda	11	6
1565.	survey	11	4
1566.	television	11	Not listed
1567.	tetrachloride	11	Not listed
of 1568.	toxins	11	10
1569.	ventilation	11	8
1570.	vessel	11	2
1571.	zone	11	3
1572.	aqueduct	12	12
1573.	cubic	12	7
1574.	dam	12	4
1575.	forecasting	12	10
of 1576.	fossils	12	7
1577.	galaxy	12	15
of 1578.	ohm	12	16
o 1579.	Saturn	12	10
1580.	sea level	12	20
1581.	sensitive	12	7
1582.	activity	13	7
1583.	agent	13	4
† 1584.	apparatus	13	7
1585.	ash	13	Not listed
1586.	commutator	13	15
1587.	convert	13	4
1588.	elevation	13	6
1589.	engineering	13	16
1590.	expose	13	3
† 1591.	igneous	13	Not listed
of 1592.	iodine	13	11
1593.	kerosene	13	6
1594.	parallel	13	4
1595.	perpetual	13	4
of 1596.	physics	13	13
1597.	polar	13	6
1598.	prediction	13	8
1599.	splint	13	13
of 1600.	tissue	13	20
1601.	transformer	13	7
1602.	ultra-violet	13	9
1603.	venus	13	3
of 1604.	ammonia	14	8
1605.	bureau	14	19
of 1606.	calcium	14	2
1607.	cross-section	14	7
1608.	desert	14	4
of 1609.	drainage	14	1
1610.	exist	14	8
1611.	grain	14	Not listed
1612.	hurricane	14	7
of 1613.	hydroxide	14	8
1614.	irrigation	14	4
1615.	Jupiter	14	4
1616.	kindling	14	4
1617.	lime	14	16
1618.	medium	14	2

+ 1619.	nebula	14	16
1620.	period	14	2
1621.	permanent	14	4
1622.	phonograph	14	9
o+ 1623.	pistil	14	8
1624.	precipitation	14	11
1625.	project	14	5
1626.	release	14	3
o+ 1627.	universe	14	6
1628.	angle	15	4
1629.	cement	15	4
1630.	characteristics	15	5
1631.	classification	15	7
o+ 1632.	combustion	15	7
1633.	concrete	15	6
o+ 1634.	direct current	15	Not listed
1635.	humus	15	14
1636.	impurity	15	9
o+ 1637.	larva	15	7
1638.	meridian	15	6
1639.	planetesimal	15	Not listed
+ 1640.	potassium	15	9
1641.	primitive	15	7
1642.	principal	15	2
o 1643.	spectrum	15	12
1644.	tire	15	6
1645.	vitiate	15	15
1646.	wave	15	1
1647.	alcohol	16	7
1648.	breeding	16	17
1649.	caisson	16	Not listed
1650.	immunity	16	10
1651.	limestone	16	7
o+ 1652.	organ	16	2
1653.	plug	16	7
1654.	reproduction	16	7
o+ 1655.	retina	16	11
o+ 1656.	spore	16	9
1657.	stem	16	3
1658.	structure	16	6
1659.	transmission	16	3
1660.	volume	16	11
1661.	carburetor	17	4
1662.	crude	17	9
1663.	draft	17	6
1664.	exhaust	17	3
1665.	explosion	17	4
1666.	freeze	17	4
1667.	freezing point	17	8
1668.	insert	17	2
1669.	manufacture	17	Not listed
1670.	metamorphic	17	5
o+ 1671.	stamen	17	2
1672.	submarine	17	Not listed
1673.	timbre	17	9

o+1674.	watt	17	10
1675.	alabaster	18	18
o 1676.	alternating	18	7
o+1677.	chlorine	18	3
1678.	column	18	8
o+1679.	convex	18	3
1680.	deposit	18	15
1681.	globe	18	3
1682.	nutrients	18	9
o+1683.	oxidation	18	7
o+1685.	phosphorous	18	9
1686.	physical	18	8
o+1687.	rotation	18	5
1688.	shaft	18	7
1689.	sterilize	18	4
o+1690.	clay	19	2
1691.	copper	19	2
o+1692.	decay	19	3
1693.	decrease	19	4
o+1694.	galvanometer	19	Not listed
o+1695.	glacier	19	15
1696.	grid	19	16
o+1697.	intensity	19	7
1698.	mars	19	5
1699.	melt	19	2
1700.	musical	19	3
o+1701.	rotate	19	9
1702.	spiral	19	9
1703.	agriculture	20	3
1704.	distribute	20	5
o+1705.	efficiency	20	9
1706.	gravel	20	5
o+1707.	lung	20	4
o+1708.	magnetism	20	12
o 1709.	meteors	20	6
o+ 1710.	mold	20	8
1711.	purify	20	6
1712.	reduce	20	3
+1713.	sedimentary	20	20
1714.	unite	20	1
o+1715.	volt	20	12
o+1716.	ampere	21	13
o+1717.	condensed	21	6
1718.	contact	21	7
1719.	dense	21	4
1720.	gear	21	7
1721.	kilowatt	21	19
1722.	locality	21	7
1723.	sulphate	21	9
1724.	aerial	22	7
o+ 1725.	Fahrenheit	22	9
o+ 1726.	foot- pound	22	Not listed

1727.	generation	22	3
1728.	linewater	22	20
1729.	revolve	22	5
1730.	series	22	4
1731.	tornado	22	11
1732.	typhoid	22	7
ot 1733.	axis	23	6
ot 1734.	carbohydrates	23	7
ot 1735.	convection	23	Not listed
1736.	dew	23	2
1737.	fabric	23	6
ot 1738.	filter	23	7
ot 1739.	heavens	23	1
1740.	meter	23	4
1741.	pest	23	9
o 1742.	rainfall	23	6
ot 1743.	refracted	23	19
1744.	reverse	23	4
1745.	vaccination	23	9
1746.	astronomer	24	8
1747.	camera	24	8
ot 1748.	constellations	24	8
1749.	furnace	24	3
1750.	roots	24	2
ot 1751.	sulphur	24	6
1752.	transmit	24	9
1753.	voltage	24	16
ot 1754.	aneroid	25	Not listed
ot 1755.	comets	25	7
ot 1756.	erosion	25	10
o 1757.	pitch	25	8
1758.	zinc	25	7
ot 1759.	altitude	26	6
1760.	combine	26	3
1761.	film	26	5
1762.	siphon	26	11
ot 1763.	solar	26	9
1764.	aluminum	27	10
1765.	average	27	3
1766.	diet	27	5
o 1767.	digested	27	7
ot 1768.	expand	27	6
ot 1769.	molecule	27	12
1770.	positive	27	5
ot 1771.	equator	28	6
1772.	filtration	28	15
1773.	negative	28	6
1774.	reservoir	28	8
1775.	rod	28	2
ot 1776.	solid	28	3
ot 1777.	frequency	29	12
ot 1778.	mineral	29	4
1779.	piston	29	11
1780.	wick	29	11
ot 1781.	disease	30	2
ot 1782.	heredity	30	6

1783.	law	30	1
1784.	sounder	30	13
1785.	turbine	30	19
o+ 1786.	diaphragm	31	10
1787.	flask	31	9
1788.	mass	31	2
o+ 1789.	tide	31	2
o+ 1790.	compound	32	5
1791.	crystal	32	4
1792.	purified	32	6
1793.	scales	32	2
o+ 1794.	starch	32	8
1795.	compressed	33	3
o+ 1796.	eclipses	33	6
1797.	level	33	2
1798.	sewage	33	11
o+ 1799.	acid	34	6
1800.	artificial	34	5
o 1801.	mixture	34	4
1802.	stopper	34	17
1803.	absorb	35	6
1804.	dial	35	6
1805.	diameter	36	8
o+ 1806.	gravitation	36	9
o+ 1807.	hydrogen	36	7
o+ 1808.	image	36	3
1809.	pulley	36	11
o+ 1810.	vibrate	38	3
o+ 1811.	compass	37	2
1812.	fulcrum	37	13
o+ 1813.	mercury	37	5
o+ 1814.	microscope	37	7
o+ 1815.	nitrogen	37	7
1816.	faucet	38	10
1817.	illumination	38	9
1818.	incline	38	3
1819.	nature	38	1
o 1820.	proteins	38	7
1821.	ether	39	7
1822.	receiver	39	7
1823.	scientifically	39	18
1824.	measurement	40	5
o 1825.	orbit	40	8
1826.	relative	40	3
1827.	vapor	40	3
1828.	factor	41	7
1829.	key	41	2
1830.	plane	41	4
1831.	armature	42	19
1832.	layer	42	5
1833.	rubber	42	3
1834.	gasoline	43	5
o+ 1835.	insect	43	3
o+ 1836.	motor	43	4
1837.	dirigible	44	15
1838.	mechanic	44	4

1839.	spring	44	1
1840.	valve	44	6
ot 1841.	mechanical	45	7
1842.	reflect	46	4
1843.	speed	47	2
1844.	filament	48	8
1845.	mosquito	48	8
1846.	conductor	49	5
1847.	degree	49	2
1848.	humidity	50	9
1849.	storage	50	7
1850.	increase	51	1
1851.	communicating	52	6
1852.	invention	52	3
1853.	spark	52	3
ot 1854.	telescope	53	8
1855.	dioxide	54	9
1856.	fuel	55	3
1857.	metal	55	2
1858.	principal	55	2
1859.	boil	56	2
ot 1860.	element	56	3
ot 1861.	environment	56	7
1862.	vibration	58	9
ot 1863.	vitamin	58	11
ot 1864.	atmosphere	59	17
1865.	germ	59	6
1866.	ray	59	2
1867.	community	60	4
ot 1868.	electromagnets	61	18
1869.	magnetic	61	8
1870.	radio	61	11
1871.	construction	62	4
ot 1872.	electron	62	20
ot 1873.	barometer	63	15
1874.	motion	63	2
ot 1875.	dissolve	64	3
1876.	bulb	65	5
1877.	telegraph	65	4
ot 1878.	thermometer	65	5
ot 1879.	friction	66	7
1880.	scientist	66	7
1881.	generator	67	15
ot 1882.	lever	67	9
ot 1883.	resistance	67	7
1884.	process	68	3
1885.	region	68	2
1886.	transportation	69	4
1887.	unit	69	6
1888.	evaporation	70	8
1889.	particle	70	6
1890.	solution	70	5
1891.	vacuum	70	12

1892.	moisture	71	4
1893.	produce	71	2
1894.	space	71	1
1895.	cylinder	73	5
1896.	instrument	74	3
1897.	observation	75	4
1898.	development	76	4
1899.	power	78	1
o+ 1900.	planet	79	4
1901.	wind	80	1
1902.	dry cells	81	Not listed
1903.	telephone	84	3
o+ 1904.	circuit	88	4
1905.	direction	88	2
o+ 1906.	force	88	1
o+ 1907.	liquid	88	3
o+ 1908.	matter	88	1
1909.	electrical	90	6
1910.	develop	92	3
1911.	battery	93	5
o+ 1912.	pole	93	2
o+ 1913.	chemical	96	8
o+ 1914.	magnet	97	7
1915.	source	99	3
o+ 1916.	lens	100	10
o+ 1917.	climate	101	3
o+ 1918.	oxygen	105	8
1919.	coil	107	5
o+ 1920.	sound	107	1
1921.	material	110	2
o+ 1922.	cell	118	3
1923.	carbon	119	8
o+ 1924.	iron	120	1
o+ 1925.	steam	125	2
1926.	machine	126	2
o 1927.	animal	143	1
o 1928.	electricity	147	7
1929.	surface	150	2
o+ 1930.	soil	164	1
o+ 1931.	pressure	165	5
o 1932.	weather	166	1
o+ 1933.	gas	181	3
o+ 1934.	temperature	197	3
o+ 1935.	bacteria	200	10
1936.	tube	214	4
o+ 1937.	energy	240	4
1938.	substances	240	3
1939.	body	244	1
1940.	electric	251	3
1941.	current	268	2
o 1942.	plant	290	1

1943. experiment	378	5
1944. science	386	3
o 1945. earth	396	1
o 1946. light	405	1
o 1947. heat	476	1
o 1948. air	626	1
1949. water	1065	1

Sample of words not listed in Thorndike's

Dictionary

Every tenth word not listed in Thorndike's

Dictionary in the word list is used in this sample

words	frequency	Not listed
1. alumina	1	Not listed
2. axil	1	Not listed
3. bifocal	1	Not listed
4. cannel	1	Not listed
5. collodian	1	Not listed
6. decimeter	1	Not listed
7. electrophorous	1	Not listed
8. fluorine	1	Not listed
9. hydration	1	Not listed
10. lactate	1	Not listed
11. manometer	1	Not listed
12. muriatic	1	Not listed
13. paregoric	1	Not listed
14. prussic	1	Not listed
15. salicylic	1	Not listed
16. sorus	1	Not listed
17. sulphite	1	Not listed
18. underweight	1	Not listed
19. water plane	1	Not listed
20. agonic	2	Not listed
21. cactus	2	Not listed
22. cumulo-nimbus	2	Not listed
23. hieroglyphics	2	Not listed
24. maltose	2	Not listed
25. seismograph	2	Not listed
26. aileron	3	Not listed
27. culex	3	Not listed
28. isobar	3	Not listed
29. peat	3	Not listed
30. anticyclone	4	Not listed
31. hypha	4	Not listed
32. voltaic	4	Not listed
33. polaris	5	Not listed
34. helicopter	7	Not listed
35. uranus	9	Not listed
36. planetesimal	15	Not listed

Table I shows that there are six hundred twenty-three words found in this study that are used only once in Obourn-Hess. Two hundred twenty-four of these words are not found in the first ten thousand according to Thorndike. One hundred eighty-four words are not given in Thorndike's Century Junior Dictionary, which contains words of the first twenty thousand. Thirty-five per cent of these words are not found in the first ten thousand; twenty-nine per cent are not found in the Thorndike Dictionary.

Table I.

Distribution of the 623 words used only once in the Obourn-Hess compared with Thorndike's thousands:

Thousand	1	2	3	4	5	6	7	8	9	10	More than 10	Not listed
Number	3	4	13	22	18	17	27	40	35	36	224	134
Per cent				3	2	2	4	6	5	5	35	29

Table II shows two hundred forty-five words used twice in the Obourn-Hess. Thirty-one per cent are not found in the first ten thousands according to Thorndike; twenty-five per cent are not found in the Thorndike Dictionary.

Table II.

Distribution of the 245 words used twice in the Obourn-Hess compared with Thorndike's thousands:

Thousand	1	2	3	4	5	6	7	8	9	10	More than 10	Not listed
Number	3	5	7	5	5	11	20	18	19	13	77	62
Per cent	1	2	2	2	2	4	8	7	7	5	31	25

Table III shows two hundred twenty-seven words used three times in Obourn-Hess. Thirty-three per cent are not found in the first ten thousand; eighteen per cent are not found in the Thorndike Dictionary.

Table III.

Distribution of the 227 words used three times in the Obourn-Hess compared with Thorndike's thousands:

Thousand	1	2	3	4	5	6	7	8	8	10	More than 10	Not listed
Number	1	6	7	7	6	14	16	27	10	15	77	41
Per cent		2	3	3	2	6	7	11	4	6	33	18

Table IV shows one hundred thirty-five words used four times in the Obourn-Hess. Twenty-eight per cent are not found in the first ten thousand; sixteen per cent are not found in the Thorndike Dictionary.

Table IV.

Distribution of the 135 words used four times in the Obourn-Hess compared with Thorndike's thousands:

Thousand	1	2	3	4	5	6	7	8	9	10	More than 10	Not listed
Number	0	4	4	7	7	10	12	8	11	12	38	22
Per cent		2	2	5	5	7	8	5	8	8	28	16

Table V shows one hundred six words used five times in Obourn-Hess. Thirty-three per cent are not found in the first ten thousands; eleven per cent are not found in the Thorndike Dictionary.

Table V.

Distribution of the 106 words used five times in Obourn-Hess compared with Thorndike's thousands:

Thousand	1	2	3	4	5	6	7	8	9	10	More than 10	Not listed
Number	0	3	11	2	6	6	10	5	7	8	36	12
Per cent		2	10	1	5	5	9	4	6	7	33	11

Table VI shows sixty one words used six times in Obourn-Hess. Twenty-six per cent are not found in the first ten thousand; six per cent are not found in the Thorndike Dictionary.

Table VI.

Distribution of the 61 words used six times in Obourn-Hess compared with Thorndike's thousands;

Thousand	1	2	3	4	5	6	7	8	9	10	More than 10	Not listed
Number	1	1	2	4	3	5	7	8	5	5	16	4
Per cent	1	1	3	6	4	8	11	13	8	8	26	6

Table VII shows forty-five words used seven times in the Obourn-Hess. Thirty-five are not found in the first ten thousand; thirteen per cent are not found in the Thorndike Dictionary.

Table VII.

Distribution of the 45 words used seven times in the Obourn-Hess compared with Thorndike's thousands;

Thousand	1	2	3	4	5	6	7	8	9	10	More than 10	Not listed
Number	2	1	0	2	3	2	8	2	1	2	16	6
Per cent	4	2		4	6	4	17	4	2	4	35	13

Table VIII shows thirty-three words used eight times in The Obourn-Hess. Thirty-six per cent are not found in the first ten thousand; six per cent are not found in the Thorndike Dictionary.

Table VIII.

Distribution of the 33 words used eight times in the Obourn-Hess compared with Thorndike's thousands:

Thousand	1	2	3	4	5	6	7	8	9	10	More than 10	Not listed
Number	1	3	2	2	1	2	4	1	3	0	12	2
Per cent	3	9	6	6	3	6	12	3	9		36	6

Table IX shows forty words used nine times in the Obourn-Hess. Twenty-five per cent are not found in the first ten thousands; fifteen per cent are not found in the Thorndike Dictionary.

Table IX.

Distribution of the 40 words used nine times in the Obourn-Hess compared with Thorndike's thousands:

Thousand	1	2	3	4	5	6	7	8	8	10	More than 10	Not listed
Number	0	0	2	2	0	2	2	6	6	4	10	6
Per cent			5	5		5	5	15	15	10	25	15

Table X shows twenty-six words used ten times in the Obourn-Hess. Fifteen per cent are not found in the first ten thousands; three per cent are not found in the Thorndike Dictionary.

Table X.

Distribution of the 26 words used ten times in the Obourn-Hess compared with Thorndike's thousands:

Thousand	1	2	3	4	5	6	7	8	9	10	More than 10	Not listed
Number	0	0	1	1	2	1	5	5	4	2	4	1
Per cent			3	3	7	3	19	19	15	7	15	3

Table XI shows two hundred seventeen words used from eleven to twenty-five times in the Obourn-Hess. Sixteen per cent are not found in the first ten thousand; seven per cent are not found in the Thorndike Dictionary.

Table XI.

Distribution of the 217 words used eleven to twenty-five times in the Obourn-Hess compared with Thorndike's thousands:

Thousand	1	2	3	4	5	6	7	8	9	10	More than 10	Not listed
Number	4	13	17	22	10	17	36	17	22	8	35	16
Per cent	1	5	7	10	4	7	16	7	10	3	16	7

Table XII shows ninety-one words used from twenty-six to fifty times in the Obourn-Hess. Sixteen per cent are not found in the first ten thousands.

Table XII.

Distribution of the 91 words used twenty-six to fifty times in the Obourn-Hess compared with Thorndike's thousands:

Thousand	1	2	3	4	5	6	7	8	9	10	More than 10	Not listed
Number	3	10	9	7	10	11	10	8	5	3	15	0
Per cent	3	10	9	7	10	12	10	8	5	3	16	

Table XIII shows forty-eight words used from fifty-one to seventy-five times in the Obourn-Hess. Sixteen per cent are not found in the first ten thousand:

Table XIII.

Distribution of the 48 words used fifty-one to seventy-five times in the Obourn-Hess compared with Thorndike's thousands:

Thousand	1	2	3	4	5	6	7	8	9	10	More than 10	Not listed
Number	2	7	7	6	4	4	4	3	3	0	8	0
Per cent	4	14	14	12	8	8	8	6	6		16	

Table XIV shows nineteen words used from seventy-six to one hundred times in Obourn Hess. All of these words are found in the first ten thousands except five, which are not found in the Thorndike Dictionary.

Table XIV.

Distribution of the 19 words used seventy-six to one hundred times in the Obourn-Hess compared with Thorndike's thousands:

Thousand	1	2	3	4	5	6	7	8	9	10	More than 10	Not listed
Number	4	2	4	3	1	1	1	1	0	1	0	1
Per cent	21	10	21	19	5	5	5	5		5		5

Table XV shows thirty-three words used more than one hundred times in Obourn-Hess. All of these words are found in the first ten thousands.

Table XV.

Distribution of the 33 words used more than one hundred times in the Obourn-Hess compared with Thorndike's thousands:

Thousand	1	2	3	4	5	6	7	8	9	10	More than 10	Not listed
Number	12	5	7	2	3	0	1	2	0	1	0	0
Per cent	36	14	21	6	9		3	6		3		

CHAPTER III

SUMMARY OF THE FINDINGS OF THE STUDY

Vocabulary difficulties of textbooks are determined usually with the aid of some standard word-list, as Thorndike's.¹

A word is called uncommon if it is not in Thorndike's word list, the list of words found by Professor Thorndike to be most important on the basis of range and frequency of usage in the world's reading.²

The length of the general science list certainly leads one to question the advisability of the present type of text in this subject, since it contains a longer list of technical words than any other subject. Such text surely leave a good deal to be desired if one intends them to be "introductory." Many teachers do not realize how many technical words the tests contain. If a child does not know the meaning of dilute, concentration, density etc., it is evident that he has failed to grasp an entire group of ideas that are very necessary for him in his mastery of science.³

Textbooks in high school science are often criticized because of their difficulty. There is abundant evidence, obtained through the use of standard tests, that students do not secure an adequate command of the vocabulary of the sciences which they study. A word is called important if its frequency is as much as 10. It will be difficult to get 50 per cent of the technical terms used by textbook writers into a list which may be defined as important

1

School Science and Mathematics, Oct. 1927. Vol. 27.
The Curricular Studies. p. 714.

2

Powers, Samuel Ralph, A Vocabulary of Scientific Terms for High School Students, Teachers College Record, Nov., 1926, Vol. 28. pp. 220-221.

3

Pressey, Luella Cole. The Determination of the Technical Vocabulary of the School Subjects. School and Society, July 19, 1924, Vol. XX, pp. 91-96.

on the criterion of usefulness in a liberal education. It may be argued that the student should be equipped with a large "margin of safety" of words in order that he may be prepared for any emergency, and this might be granted if the words were actually learned. But the fact that the student does not learn the great mass of them would seem to make this argument invalid.⁴

The authors of general science texts have been, for the most part individuals whose training has been from the point of view of specialized science. It has not been easy for these writers to refrain from introducing into their books too great a burden from the technical terminology of their specialty.⁵

Thirty-two per cent of the words of the list used in this study occurred with but a single frequency. For this reason there seems to be support for dropping from general science a large number of single frequency words, especially when it is possible to substitute in their places simple phrases which will carry the meaning. The results from the use of objective tests show clearly that these elements of learning are not mastered in general science.⁶

Seventy-eight per cent of the entire list has the frequency of less than 10. According to Power's rule for important words, 78 per cent of this list would be considered unimportant.

Nineteen per cent are not listed in Thorndike's list of words. These are called uncommon words.

4

Powers, op. cit. p.223.

5

Powers, op. cit. p.224.

6

Ibid. p. 225.

A relative measure of the difficulty of textbooks is, therefore, the number of words which are used in them which are not found in The Teacher's Word Book.⁷

Since, in the opinion of several foreign language teachers, the acquisition of eight hundred to a thousand words in new language is a very sizable vocabulary for the result of a year of study, "the pupil in any of the sciences has as great, or greater, vocabulary to master wholly aside from acquisition of considerable subject matter". Lack of knowledge of the meaning of a word "usually indicates a deeper lack of meaning for a whole section of subject matter."⁸

The Obourn-Hess is overloaded with scientific words; many of these the student will probably never see again, unless he specializes in science in college.

7

The Teachers Journal and Abstract, Vol. II, No. 9, November 1927, p. 625.

8

Curtis, Francis D. Investigations in the Teaching of Science. 1933
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Subjects. p. 303.

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