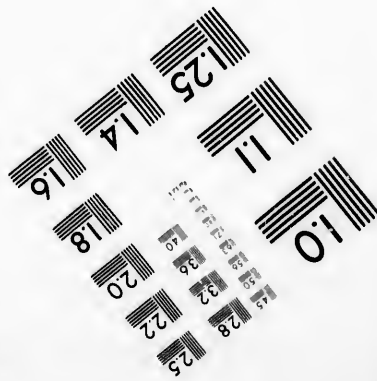
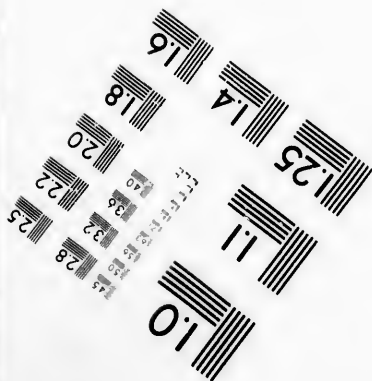
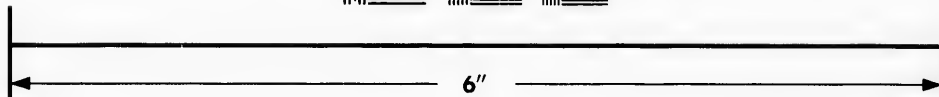
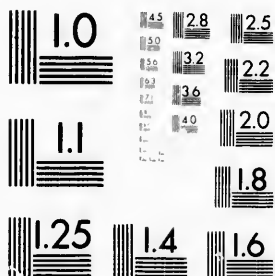


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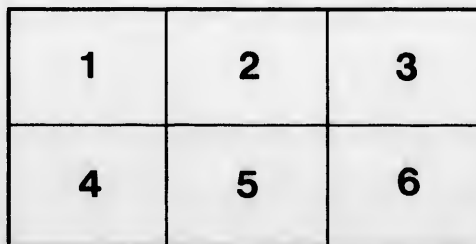
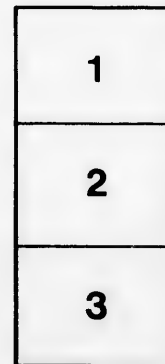
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THE
NUMBER AND NATURE

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OF

VOWEL SOUNDS.

AN ESSAY

READ BEFORE THE CANADIAN INSTITUTE ON THE 13TH OF DECEMBER, 1884.

BY

(1)
MARTIN LUTHER ROUSE,
OF THE ENGLISH BAR.

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UPON THE

NUMBER AND NATURE OF VOWEL SOUNDS.

To any one who has reflected at all upon his native language, it must have seemed strange indeed that so large a number of vowel sounds is represented by five symbols. And when he first became acquainted with a foreign tongue, his surprise must have grown intense upon finding the same symbols doing duty for sounds hitherto unknown to him; while, more curious still, a sound denoted in his own tongue by one of them would in the foreign tongue be denoted by another, and a sound hitherto known by that other sign he would now see represented by a third. Thus the ordinary sound given to *a* in English is represented by *e* in French; while the sound given to *e* in English is transferred to *i* in French.

It would be highly interesting to discover how many vowel sounds are in existence; and it would be practically useful to invent for them a set of representative symbols to be used in common by all nations. Not that one could expect the nations to change their spelling; but in every bilingual dictionary the vowel sounds in each word could be determined for the foreign reader by marks of reference to a table of common symbols. Nor would such a system be without its value in the ordinary defining and pronouncing dictionary of one language, especially if that language were English, in which one written vowel or vowel combination often indicates many kinds of sound, while one sound is often indicated by many vowels or vowel combinations. The discovery is our aim in this essay; the invention we leave to other writers.

The path has often been trodden before by English lexicographers and grammarians as a matter of necessity, and recently by some eminent Continental inquirers out of a thirst for discovery or as a branch of some other scientific track they were pursuing.

All we can say of the system of the most renowned of the Continental explorers, Helmholtz, which we have not had leisure to do more than glance at, is that, while most interesting as showing the musical character of certain of the vowel sounds, it is very far from a complete classification of them. If, on the other hand, we examine the English systems, we find that the earlier ones are very

incomplete, and the later ones still much lacking in method. Amongst both Englishmen and foreigners there has been too little study of the pronunciation of other languages than their own.

We will not trouble our readers with a discussion of old Walker's classification, although either in his original dictionary or in dictionaries founded upon his it must have been referred to scores of times by every educated Englishman; neither will we deal with Webster's, although it is more complete than Walker's. So many well-founded alterations have been made in their plans by recent classifiers that I think no one now can be looking up to them as systems. But we would just say that Webster gives every sound save one existing in the English language, but abounds in reduplications; while Walker is guilty of three omissions besides reduplications. The arrangements adopted by both writers and the repetitions that they make, prove that they intended rather to show the number of ways wherein each vowel sound could be written than the number and relation of the sounds themselves.

Let us rather take up an authority ten years younger than Webster and forty or fifty years younger than Walker which for two decades at least has been guide to the ears of a very large and quick-witted class of men, both in England and America—Isaac Pitman's Manual of Phonography.

The following is his table of vowels and diphthongs:—

SIMPLE VOWELS.			
LONG.		SHORT.	
	SIGN.		SIGN.
1. AH, as in half	•	1. a, as in that	•
2. EH, " pay	•	2. e, " pen	•
3. EE, " she	•	3. i, " is	•
4. AW, " thought	-	4. o, " not.....	-
5. OH, " so	-	5. u, " one	-
6. OO, " poor.....	-	6. oo, " foot	-

into the short or long sound commonly given in English; or if the long or short sound at first be the one commonly heard before *r* in our language, it passes into the short or long sound commonly heard before *r* in our language. Thus the long sound of *a* in *bar* finds its true correlative in a foreign sound that we shall presently mention, and not in the first vowel of *burrow*; and to the sound of *e* in *merry* we have already assigned with Pitman the sound of *a* in *pay* or *mate* for a correlative; but just as the *a* in *barrow* is the short sound always heard before *r* in English, so is the *a* in *bar* the long sound always heard; and while the *e* of *merry* is the common English short *e*, uttered before any consonant, so is the *e* of *mere* the common English long *e*. Moreover, the word *sore* and its analogues actually contain the true correlative sound of the *o* in *sorrow* and its analogues. Now, there are a large number of English words in which the sound of *o* in *one* is represented either by *o* or *u* followed by two *r*'s; and in every case where a word beginning with the same spelling can be found but having one *r* instead of two, the vowel that precedes the *r* has one particular sound—that of the *u* in *burn*: thus *worry*, with two *r*'s, becomes *word*, *world*, and *worse* with one *r*; *hurry*, with two, becomes *hurt* with one; *curry*, with two, *cur* and *cut* with one. It is plain, then, that in practice we English folk treat the *u* of *burn* as the long form of the *o* in *one* and *son*, or *u* in *sun* and *bun*?

Again, that *a* following *r* or any other special letter is not always wanted to bring the *u* sound of *burn* into being is proved by the fact that the last letter of our few common nouns and numerous proper nouns that end in *a* has that sound. Thus, we do not pronounce *sofa*, *idea*, *Clara*, and *Augusta* as if spelt *so-fah*, *i-dyah*, *Clair-ah*, *August-ah*, but as though written *so-fur*, *i-dyur*, *Clair-ur*, and *August-ur*. But the truth is far more conspicuous in our neighbours' languages; the final *e* of German words and final unaccented *e* of French ones having always this same sound. Pronounce, for example, *laufe* and *stube* in German, and *se* and *que* in French. Therefore the sound is a specific one, not a mere shading.*

Lastly, we can find no long sound that bears a resemblance to the *o* of *one* or *son*, or the *u* of *bun*, other than the *u* of *burn*; nor, reciprocally, can we find any short sound corresponding to this save what is heard in *one*, *son*, and *bun*.

We therefore make a final appeal to your ears: is not *bun* clearly the short way of pronouncing *burn*, *ton* of pronouncing *turn*, *hut* of *hurt*, and *cut* of *cut*?

In the speech of the Lowland Scotch both the contrast and the correlation are well displayed; since for *world* they say *wurruld*, and for *murmur*, *murr-murr*.

(Mr. Pitman does mention the sound of *u* in *burn* in the pair of typical sentences whereby he illustrates the effect of *r* upon a foregoing

* The preceding argument was added after the essay had been read.

vowel. But he gives it no distinct footing ; leaving his pupils to represent it in either of two ways, according as it is spelt with *u* and *r*, or, as is often the case, with *e* and *r*. Compare "*furs*" and "*her*" in the couplet.)

Following Walker but not Webster, Pitman omits from his catalogue the sound of *a* in *spare* or *care*, or of *ea* in *bear* or *ai* in *pair*. In his couplet he treats it merely as a subordinate or slightly shaded form of the *a* or *ai* in *Spain*, *cane*, *bane*, and *pane* or *pain*, produced by the influence of the succeeding *r*.

But, for that matter, Pitman's is the view commonly taken up to the present time by the grammarians and lexicographers of England, France, and Italy, if not of Germany also. Ollendorff's French-Italian grammar, for instance, gives to the *e* in the second syllable of *credete* the same sound as to that in the second syllable of *credere* ; Noël and Chapsal, taking their stand wholly upon accent-marks, would make the uttered vowel of *grève* identical with the uttered vowel of *frère*.

Yet let us look again at the effect of *r* upon certain vowels that it follows.

Walker calls the *a* in *mart* the long Italian *a* sound, and the *a* in the French word *matin* (as it truly is) the corresponding short sound ; and he also treats the *o* in *corn* as the long form of the *o* in *con*. By analogy and an appeal to sensitive ears, we have further concluded that the *u* in *burn* is the long form of the *u* in *bun*.

Now, in not one of the long-sounding words here given is the *r* pronounced at all : it simply effects the exchange of a short vowel for its correlative long one. But no more is it pronounced in *care*, *bear*, and *pair* or their cognates ; and by substituting participial forms of the same words or of words having the same sound, we get *cared*, *bared*, and *pared*, which are in perfect analogy with *mart*, *corn*, and *burn*. We ask our readers to conclude that *cared*, *bared*, and *pared*, or *care*, *bear*, and *pair*, contain the respective long forms of the vowels heard in *cad*, *bad*, and *pad*, or *carry*, *Barry*, and *parry*.

Is the sound heard in *care* a simple vowel or diphthong ? We answer, a diphthong—composed of the short *e* in *met*, followed by the short *u* in *bun*. Utter them quickly together, and judge for yourself.

It is remarkable that in Anglo-Saxon many words to the vowels of which we now give the sound of *a* in *carry* were written with *ae* diphthong, which is the way wherein the Germans now represent the sound of *a* in *care* (at least when a word begins with a capital letter—otherwise by *ä*). Thus *at*, *back*, *bast*, and *cap* were originally *aet*, *baeck*, *baest*, and *caeppe* ; and our great Alfred's name was written *Ælfred*. If our word *had*, in the sense of *ordered*, be descended from *hatan* to *bid*, and *have* in the present tense for *order* be a corruption, then the inscription round the jewel found near the Isle

of Athelney and preserved at Oxford, "Ælfred hædde me geworean," would read in modern English almost identically, "Alfred had me worked."

Why should the sound of *ew* in *new* be treated by Pitman as a diphthong? Why more than the combinations of *y* with other vowels heard in

yarn, yea, yeast, yawn, and yoke,
yam, yes, you, and young?

We just now styled the Continental short *a* and *o* recondite sounds; and, indeed, they are usually seized with much difficulty by Englishmen—the *o* because, as we have already said, it is only found in English in unaccented syllables, the *a* because it does not exist in our language at all. The French *happe* is not our *hap*, nor the German word *matt* our *mat*; nor is the Italian *arno* to be pronounced as the last part of *piano* is by the English: yet by far the greater number of Englishmen who can converse in French, German, or Italian utter the words after this fashion. *Happe* is really the brief way of articulating our *harp*, *matt* of our *mart*, and *arno* of the river *Arno* after dropping the *r*.

The writer is doubtless giving an experience like that of many others when he tells how, after spending a year and a half in Switzerland between the ages of twelve and fourteen, having thought in French for a year past, and being able to speak and write fluently in the language, he one day began repeating to a tiny Swiss boy the words of the song—

"J'ai du bon tabac," &c.

when the youngster mockingly cut me short with, "Quest-ce que tu dis, done?"

"J'ai du bon tapin!"

Possibly if we had had fewer English and more French associates, we should not have made the mistake.

The Germans and Italians, on the other hand, do not possess our common short sound of *a*; and the French have it only in their nasal forms *in*, *ain*, or *ein*, as the little boy showed by his inquiry. The French *vin*, *pain*, and *teint* each really contain the same vowel as our *vin*, *pan*, and *tan*; and in keeping with what we have already said as to the long form of this vowel, *viwent* and *tinrent* will be found stepping stones from *vin* and *teint* to the French *verre* and *terre*, or to our *vary* and *tare*.

Let us now, the better to substantiate our charges against previous classifiers, and the more firmly to build up our own system, pass a few criticisms upon the favourite English lexicographer of the present day, Mr. Austin Nuttall.

This writer, clinging to old tradition, represents the first vowel sound in *vary* and *wary* and their analogues in the same way as the first in *making* and *taking*—rewriting these examples phonetically *vá-re*, *wá-re*, *má-king*, and *tá-king*.

He also draws a false distinction between the sound of *oo* in *wood* and *wool* and that of *u* in *full* or *pull*. Is there any difference to the ear, I ask, between *ull* in *pull*, which he writes *pul*, and *ool* in *wool*, which he writes *wóol*? Surely as *pull* is to *poop* so is *wool* to *woof*. In confusion our author at last writes *could kud*, and *would wóod*.

Lastly, Mr. Nuttall wrongly declares the *a* in the suffix *-able* to be the short Italian *a*—the short sound corresponding to the long *a* in *father*; whereas it really has no sound of *a* at all, but the one so commonly occurring in unaccented syllables heard in *ban* on the one hand and *Indian* and *opinion* on the other. Say “*Fret, your rubll* kill that fly,” and you utter the word *durable* with a mere difference in the stress; while *readable* is just *redouble* with the accent on the first syllable instead of the second.

Even were Nuttall’s dictionary without these and other flaws besides, and were its system so far altered as invariably to represent a particular sound by a particular letter or group of letters, it would only be a classification of English sounds after all. What we are making our goal here is the complete tabling of all the vowels and vowel compounds uttered by the different nations of the world. It is true that for this purpose we have only examined four languages of western Europe; yet from what we have heard concerning the pronunciation of other tongues and from certain striking features of perfection that the numbers in our collection present, we are led to the conclusion that we have discovered and arranged all the simple vowels that exist.

In the following table, for the composition of which we have thoroughly prepared the reader, we have arranged typical words from each language containing the same sound (where any such exist) in one horizontal line; the words showing the long and short form thereof being placed side by side in pairs. We have underlined in each word the sound exemplified; and further, where the word is polysyllabic we have marked with a thick accent the syllable on which the stress is laid, if it affects the length or species of a vowel in the same syllable or another. We have numbered all the simple sounds in the first double column, or the blanks therein corresponding to sounds in the other columns, by pairs; giving a figure with the long mark over it to each long vowel, and the same figure with a short mark to the corresponding short vowel. Lastly, we have used the same numbers to identify the simple sounds that take part in forming each diphthong. (The stress is marked with an accent thicker than the conventional one.)

TABLE OF THE VOWEL SOUNDS USED IN THE FOUR LANGUAGES OF WESTERN EUROPE.

<i>Simple.</i>		FRENCH.		GERMAN.	ITALIAN.
ENGLISH.					
1 boom	1 bush	bone,	bourré	kuh, kund	piu,† fanciúlla
2 mote	2 morality	maux (pl.),	mot	so, sold*	no, poéta
3 dawn	3 don	corps,	correcte	dort, dotter	fuóri,‡ porre
4 path	4 ———	pâte,	patte	kahn, kann	ma, áno
5 burn	5 bun	de,	———	liebe, liebes.	———
6 age	6 edge	dé,	dette	spät, speck	tre, bello
7 ———	7 ———	su,	suspétre	kühl, kümmel	———
8 keen	8 kin	vigne,	innocent	nie, nicht	si, ágio
<i>Compound.</i>					
4 + 1	cow	———		frau	———
3 + 8	boy	———		nen	———
6 + 5	pare, parry	père		sehr	sera
4 + 8	nice	taille.		frei	———
5 + 7	———	deux		öl	———

A TRIPHTHONG.—The North Germans add their sound of *ü* to our *oy* in pronouncing *eu*; and we question whether all educated Germans out of Swabia do not give this pronunciation to *äu*, as in *gebäude* for instance.

REMARKS.—In uttering the long form and the short form of the same vowel the lips and tongue are placed in the same position, the difference being produced with the throat only.

* This instance of the second short sound has been changed to one given in the body of the essay, as the fruit of criticism at the Institute.

† Monosyllabic.

‡ Dissyllabic.

Diphthongs are compounded of short vowels, not of long ones : long vowels will not coalesce, but continue to be separately heard, producing such sounds as the *ai* and *ê* (*ê* + *e*) in the French words *naïf* and *même*, and the *au* in the Italian *baule*. The Italians make it a principle to sound every written vowel ; hence they would have no diphthongs, but that they have failed to observe that subtle *r*, when brought in after *e*, will always change it into a diphthong.

W and *y* do not make true diphthongs or triphthongs with the sounds that follow them. In true diphthongs and triphthongs each vowel is sounded to the same degree, and hence the blending is complete ; whereas when *w* or *y* precedes a vowel or cluster of vowels, the *w* or *y* is heard much more faintly than the other part of the combination. *W* and *y* may be compared to grace notes in music ; whereas diphthongs are like chords. *W* and *y* are formed by bringing the lips and tongue into the same position as for sounds 1 and 8 ; but they are not uttered until the instant that the vowel or diphthong following is ready for utterance, when the breath is jerked from them on to it, all the pause and stress being thrown upon it, none upon *w* or *y*.

We find *w* in English attached to sixteen different sounds, which in the order of our list are shown as follows :—

<i>woo,</i>	<i>woke,</i>	<i>warn,</i>	<i>waft,</i>	<i>world,</i>	<i>wane,</i>	——	<i>ween ;</i>
<i>wool,</i>	——	<i>wan,</i>	——	<i>won,</i>	<i>went,</i>	——	<i>win ;</i>
<i>wound</i> (past tense),	——	<i>ware,</i>	<i>wise,</i>				
			<i>wax.</i>				

Y, again, combines with eleven sounds, as heard in

<i>youth,</i>	<i>yoke,</i>	<i>yawn,</i>	<i>yarn,</i>	<i>yearn,</i>	<i>yea,</i>	——	<i>yield,</i>
<i>occupied</i> (=okyüped),	<i>yon,</i>	——	<i>young,</i>	<i>yes ;</i>	——	——	

besides *youp* (vulgar), and *yare* (obsolete).

The French sound of *ou*, equivalent to our *w*, and of *u* and *gn*, equivalents to our *y* and *ny*, are probably heard before an equally large proportion of vowels and diphthongs ; though *ou* is not heard before its own true vowel sound whether long or short, as *w* is in the English combinations *woo* and *wool*, while *u* and *gn*, of course, do not occur nearly so often as the consonantal *y*. The Germans have no equivalent of *w* ; but their *j*, which has the same effect in introducing a syllable as our *y*, is probably heard before as many of their vowels and diphthongs. The French also form a kind of *w* from sound 7 in such words as *huit* and *huile*.

If we now count up the sounds arranged in each double column of the table, we shall find that Italian possesses twelve simple vowels and one diphthong ; French, fifteen simple vowels and three diphthongs ; English, thirteen and five respectively, and German, the full sixteen and five (besides one triphthong).

German is thus far richer than any of the other three tongues in vowel utterances ; and this, to our thinking, is one reason why German sounds so peculiarly grand when sung, the other reason being that the gutturals give vigour to the music while being somewhat toned down by it. Gutturals, when not too frequent or too loud, resemble the rough blast of a trumpet intermingling with the soft, rich melody of a harp, and the plaintive warbling of a flute, to which the other consonants and the vowels might, in turn, be likened.

Still, as spoken, English and French are not disfigured by the constant repetition of the harsh *ch* sound, nor, we may add, by the too frequent sibilants characteristic of German ; while, on the other hand, they have a far more copious assortment than Italian of vowels and diphthongs, and make up for falling short of German in this respect by possessing what German is without, a large number of combinations with *w*.

We have left nasal vowel sounds out of account in our table, they being on a distinct footing. In uttering nasal vowels the mouth is opened in exactly the same way for each as for true oral vowels ; but half the breath is allowed to pass down the nose. The different nasal vowels in use in French are heard in the words *mon*, *san(g)*, *brun*, *main* (the last answering, as we have already pointed out, to our true oral sound in *man*). But we are inclined to consider nasal vowels as corrupt forms, and cannot see that the number of sounds thus added to the French category increase the beauty of the language.

The natural melody and harmony of French, German, and English may well be compared by examining three of the choicest extracts culled from the poets of the three nations. Such are the following. In each we have marked the vowel sound, simple or compound, where it occurs for the first time, by the figures placed opposite it in the table.

La mort a des rigneurs à nul autre pareilles :

4 3 6 8 5+7 7 2 4

On a beau la prier ;

3

La cruelle qu'elle est se bouche les oreilles,

7 6 5 1 2

Et nous laisse crier.

Le pauvre dans sa cabane, où le chaume le couvre,

Est sujet à ses lois ;

Et le garde qui veille aux barrières du Louvre

N'en défend point nos rois.

—*Malherbe.*

Komm herab du schöne holde,
 $\bar{3}$ $\bar{6}$ $\bar{4}$ $\bar{1}$ $\bar{5}+\bar{7}$ $\bar{5}$ $\bar{2}$
 Und verlass dein stolzes Schloss.

$\bar{1}$ $\bar{4}+\bar{8}$ $\bar{5}$
 Blumen die der Lenz geboren
 $\bar{8}$ $\bar{6}+\bar{5}$ $\bar{3}$
 Streu ich dir in deinen Schooss.

$\bar{3}+\bar{8}$ $\bar{8}$ $\bar{2}$
 Horch! der Hain erschallt von Liedern,
 Und die Quelle rieselt klar;
 Raum ist in der kleinsten Hütte
 Für ein glücklich Liebenpaar.

—Goethe:

Can storied urn or animated bust
 $\bar{6}+\bar{5}$ $\bar{3}$ $\bar{8}$ $\bar{5}$ $\bar{6}$ $\bar{5}$
 Back to its mansion call the fleeting breath?

$\bar{1}$ $\bar{8}$ $\bar{6}$
 Can honour's voice provoke the silent dust;
 $\bar{3}$ $\bar{3}+\bar{8}$ $\bar{2}$ $\bar{2}$ $\bar{4}+\bar{8}$
 Or flattery soothe the dull, cold ear of death?
 $\bar{1}$

—Gray.

In the French stanzas there are fourteen different vowel sounds in the first forty syllables and twelve in the last forty; in the German verse sixteen in the first forty and seventeen in the last; and in the forty syllables that make up the English verse fifteen.

In variety of vowels German here plainly excels both the other languages, while English outvies French. English and German, again, are equally shown to be much richer than French in diphthongs, which are the chords of the musical rhythm. And lastly, the English verse is not blemished like the French stanzas by monotonies such as "*crueile qu'elle*" or "*dans sa cabane*," while a closer inspection would reveal that a few sounds recur much oftener in the French poetry than in the English; nor is the smoothness of the English numbers marred by the harsh repetition of sibilants which appears in its German rival (we allude, of course, to the second line of the German verse).

Two more instances will help to show how well distributed the various vowel sounds are among English words. A couplet of Macaulay's Horatius begins with six different long vowel sounds in close succession; nor will any sameness be found in the rest of its melody:

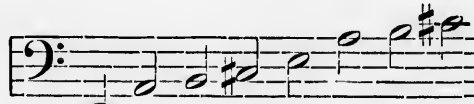
"Tall are the oaks whose acorns
 $\bar{3}$ $\bar{4}$ $\bar{8}$ $\bar{2}$ $\bar{1}$ $\bar{6}$
 Drop in dark Auser's rill."
 $\bar{3}$ $\bar{8}$ $\bar{5}$

How varied! How stately! And how rich again both in single sounds and chords is the music in that line of Longfellow's Ode to the Night:

"Thou lay'st thy fingers on the lips of care."
 4+1 6 4+8 8 5 3 5 6+5

Our readers may have been struck with the number of simple sounds that we have been able to collect—eight. It reminds one of the number of notes in the octave. Can there be any connection between the two? For some years past the attention of scientific men has been turned to the discovery of a musical pitch in vowels. Graham Bell was led to the invention of the telephone by researches of this nature, in the course of which he found that tuning forks of certain pitches were reinforced by the breathing of certain vowels upon them; but he was perplexed by finding that some vowels had apparently a double musical pitch. At the same time Helmholtz, making similar researches, met with the same difficulty; but, discovering the secondary pitches, he reproduced some of the vowels by an electric current passing through two forks at the same instant. Yet Helmholtz, whose grand book we have recently examined, has not succeeded in making a complete scale of the vowels; nor has any other writer that we are aware of. And our examination of what Helmholtz says of his own labours and those of other continental inquirers, makes us think that they are unlikely to do so, through an imperfect scrutiny on their part of a language whose pronunciation was strange to them, namely, our own.

After many experiments, and suspecting from the outset an analogy between music and speech (creation is full of such beautiful analogies), we discovered at length the eight long simple vowels enumerated in our tables; and we were able to arrange them in an ascending musical order which, when whispered, they plainly followed to our ear. We whispered them because we had read that Bell did so in his experiments; and we attempted to make piano wires answer to our breathing, but in vain. Then by repeating our ascending scale over and over again until our ears rang with it, and patiently plodding at the pianoforte until we thought we had matched it, we actually did ascertain our key-note (the pitch of the sound of *oo*), and seemed likewise to ascertain the intervals between our others. This key-note in our adult male voice is the first *e* below the bass stave upon high-pitched pianos, or the *f* next above it upon low-pitched ones. The intervals which we suggest for our readers' confirmation are



oo oh aw ah u(r) eh ü ee

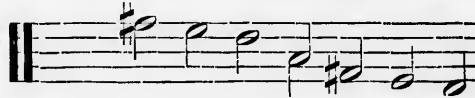
Italian or German : ū ō o(r) ā e(r) ē ü ī

French : ou o o(r) a e (final) é u ī.

At the same time (in keeping with what has been stated and proved by Helmholtz and Bell as to vowels having a double pitch) we have perceived a secondary descending scale of fainter sounds, proceeding concurrently with the ascending scale and reversing its intervals; at least we sometimes seem to trace this descending gamut from the keynote throughout, but it is especially conspicuous with the last three vowels—numbers 6, 7, and 8 of our table, doubtless because in uttering them more of the breath escapes at the side of the tongue. Thus our whole harmony would run—



oo oh aw ah u(r) eh ü ee



We then bethought ourselves of trying the vowels as spoken instead of as whispered. They seemed to be chromatic; but that clashed with their whispered form, so we could scarcely credit it. Dropping the study for some time, we tried once more; and we were convinced that chromatic they were. Thus an impression that we, and doubtless many besides ourselves, have had in childhood, that a chromatic scale sounded like people talking, is fully explained.

The keynote for the spoken vowels we find to be the same as for the whispered ones.

But now comes a strange discovery. Whereas if all the notes on the keyboard, black and white, be played from *e* natural to *b* natural, all our long simple vowels are sounded, if only the white notes be played, the vowel sounds that alone bear a name in most European languages—the German and Italian *a, e, i, o, u*—will be heard and no others. Thus, marking the spoken sounds by their most common symbols, we find that their correspondence in musical characters is—



Lastly, whether whispered or spoken, we discriminate the short form of each vowel to be a tone and a half above the long form.

There is another discovery of a different nature that we have made in the course of our study of vowel sounds. It is a strange fact that many nations of the world dwelling far apart and speaking tongues very unlike each other, possess certain interjections in common. Thus the English, the French, the Germans, the Hindoos, and the Japanese use *oh!* to express surprise, and *ah!* or *ach!* to betoken sorrow; the English, the French, and the Japanese use *eh!* to enforce a question; and while the boys of England use *aw!* to show extreme wonder, the men of Japan have recourse to *awee!* for the same purpose. May not these interjections be the remnant of a language that the peoples of the earth had in common before they were dispersed at the building of Babel, and which they were suffered to retain as evidence of their community of speech? Do not they help to prove the oneness of the human race, like the nodding of the head for 'yes' and the shaking of it for 'no,' common to so many widely severed and alien races, and like the division of the day into twelve hours, practised by the Hindoos and Japanese equally with ourselves? But a special discovery, with a record of which we will close this essay, is, that each of the eight long simple vowels that we have discriminated is used in English as an interjection with a distinctive meaning (albeit sometimes with the help of a guttural attached to it).

Thus <i>oogh!</i>	expresses anger,
<i>oh!</i>	surprise,
<i>aw!</i>	wonder,
<i>ah!</i>	sorrow,
<i>urgh!</i>	disgust,
<i>eh!</i>	inquiry,
<i>üch!</i>	contempt,
<i>eegh!</i>	pain.

In conclusion the writer would say that if, as he is daily growing more assured, his alleged discoveries are real, he will rejoice at having added another to the many known instances of symmetry in the Creator's handiwork—a common plan underlying two branches of creation long thought to be far apart.

M. L. ROUSE.

Since the public reading of this essay the following symbols have occurred to the writer's mind as simply yet sufficiently distinguishing the three kinds of vowel added to the received list, namely,

for the vowel in *dawn* and *don* Φ, ϕ ;
 for the vowel in *burn* and *burn* Ξ, ξ ;
 for the vowel in *kühl*, or first vowel in *kümmel*, Υ, υ .

It will be seen that these symbols by their form mostly give to the new vowels their true relative position on the vowel scale (that they do not do so altogether is due to the writer's desire to avoid confusion). Thus the *aw* sound comes between the real *o* and real *a* sounds, the *ur* sound just before the real *e*, and the German *ü* sound just before the real *i* (while bearing a general resemblance to the real *u*).

And this in turn corresponds with their comparative affinity, as shown by the changes that they undergo in dialects or by lapse of time. Thus *hall*, *call*, and *fall*, are pronounced *hah'l*, *cah'l*, and *fah'l*, in Scotch, or perhaps more commonly still, *hah*, *cah*, and *fah* ; while *story* and *glory*, on the other hand, are pronounced *stoh-ry* and *glöh-ry* : and a great many Torontonians turn *box*, *locks*, *socks*, and the like into *bax*, *sax*, and *lacks*, with the foreign short sound of *a*. So, again, the final German *e*'s, occurring for example in *bitte*, *kleine* and *hase* have in Swabia the true short sound of *e* given to them instead of the sound heard in *burn*. And so, lastly, is the sound of *kühl* or *schwühl* turned into the long sound of *i* over a good part of southern Germany.

The short sound, with these symbols as with all the rest, might satisfactorily be distinguished from its long correlative by using the classic marks ; and the whole vowel alphabet would then read :

$\bar{U}, \bar{O}, \bar{\Phi}, \bar{A}, \bar{\Xi}, \bar{E}, \bar{U}, \bar{I} :$ } or { $\bar{u}, \bar{o}, \bar{\phi}, \bar{a}, \bar{\xi}, \bar{e}, \bar{u}, \bar{i} :$

Finally, since under such a phonographic system there would be no other double letters to confound with them, the diphthongs might each be written in full, showing the vowels that make them up ; the double short mark over all being dispensed with as superfluous. Thus—

cow, *boy*, *pare*, *parry*, *nice*, *deux*,

would be written—

kau, *boi*, *pēær*, *pēæri*, *nais*, *dæʊ*

Where, again, two vowels coming together formed no diphthong but were heard separately, their concurrences would be distinguished from true diphthongs by giving each vowel its own mark of quantity.

caïque, *niais*, *baule*, *assai*, *fähig*, *thuest*, *payer*, and *seeing*,

would stand—

kāik, *nīē*, *bāulē*, *āsāi*, *fēihk*, *tūēst*, *pēæ*, and *sīng*.

It will have been observed that we found no place in our catalogue for what Worcester calls the intermediate sound of *a*. We think this a vain attempt at a compromise between the two principal ways in which the first vowel is uttered in such words as *branch*, *castle*, *glass*, *lance*, and *past*—namely, either as our *ā* or as our *æ*, of which the first is adopted by most Englishmen south

of the Humber and the second by most Yorkshiremen and Americans. A few uncultured Americans utter it as $\bar{e}a$, with a nasal twang to boot. Many Scotchmen and Lancashiremen, again, pronounce it as \bar{a} ; and Webster asserts that Fulton and Knight, whom Worcester claims as his supporters, really treated it as a short form of the Italian a , or in other words as our \bar{a} , Webster himself sustaining this view. But in sustaining it, he states that Thackeray in his lectures always pronounced the a in such words with the long Italian sound, that by report all the chief English preachers, statesmen, and noblemen of his time so uttered it, and that educated Englishmen in general rendered it thus down to the close of last century, when Walker, in his zeal to avoid a drawl, brought the short sound heard in *fat* (\bar{a}) into fashion. The last fact, coupled with a desire to conform English pronunciation as far as possible to the typical system, makes us lean in these words to the long Italian sound—our \bar{a} .

M. L. R.

