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PHONETIC TRANSCRIPTION OF INDIAN LANGUAGES

REPORT OF COMMITTEE OF AMERICAN
ANTHROPOLOGICAL ASSOCIATION



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The following report is based on several meetings held in New York in January, 1913, April and May, 1914, and January, 1915, by a quorum of the committee of the American Anthropological Association, charged with the drawing up of a phonetic system for transcribing Indian languages, consisting of F. Boas, Chairman, P. E. Goddard, and E. Sapir, Secretary, further on correspondence with the remaining member of the committee, A. L. Kroeber.

GENERAL PRINCIPLES

It is essential that each simple sound be consistently represented by the same symbol.

These symbols, as far as possible, should be those associated in past use with sounds similar to the ones they are chosen to represent.

For the sake of appearance and to avoid distracting the attention of the reader, mixture of fonts and unusual characters should be avoided unless indispensable.

In texts accompanied by interlinear translations all characters and marks of punctuation not strictly phonetic, such as capitals, commas, and periods, should be eliminated excepting, however, symbols introduced for facilitating grammatical analysis.

In order to reduce the cost of publishing texts, only such diacritical marks and accents as are essential for adequate transcription should be employed.

Where a uniform and fairly adequate system has already been employed in the recording of a particular language, it will usually be best to continue its use in further work with that language to facilitate comparisons and to avoid confusion. For purposes necessitating the comparison of different languages and requiring phonetic accuracy the more rigid system should be applied.

The committee considers that the needs to be met by a phonetic system for transcribing American languages are several. For the specialist who wishes to analyze and discuss the sounds of a language a very considerable number of symbols and a variety of modifying accessories in the form of diacritical marks and accents are necessary.

Such an elaborate system proves too complicated for students who are less thoroughly trained in phonetics and therefore less discriminating in their perception of sounds. For the recording and printing of large bodies of texts, a too elaborate and detailed system is expensive and often impracticable. The main objects to be secured in a large series of texts are a full vocabulary and ample illustrations from which the range in the meanings of words and phrases can be deduced. It is not necessary that words recurring many times in such texts be transcribed each time by symbols indicating all their phonetic features. It is, however, necessary that each phonetic unit be unmistakably distinguished from all others.

The committee has been led, therefore, to submit a comparatively simple system of transcription adapted to the ordinary purposes of recording and printing texts. To provide for the recording and discussing of the complex and varied phonetic phenomena encountered in American linguistics, a fairly detailed and comprehensive system has been provided. It is necessarily of such character that it can be employed only by a specialist in phonetics. By its aid it is to be hoped that the phonetic features of all of the extant North American languages may be discussed and compared.

A. RULES FOR THE SIMPLER SYSTEM

I. VOWELS

1. *Quality*.—It is important that each vowel having a distinct quality or timbre be represented by a definite character. Since the Latin alphabet has only five vowel characters, it will usually be necessary to supply others. For a full system of vowels the use of Greek characters is recommended. Since these are not always available and present other difficulties in their use, Roman characters with a diacritical mark above the letter, particularly macron (\bar{a}), may also be utilized. The following symbols are recommended:

a, as in English <i>father</i> .	α, as in English <i>but</i> .
ä, as in English <i>hat</i> .	
e, as in English <i>fate</i> .	ε, as in English <i>met</i> .
i, as in English <i>pique</i> .	ι, as in English <i>pin</i> .
o, as in English <i>note</i> .	ο, approximately as in English <i>not</i> (better as o in German <i>voll</i>).
u, as in English <i>rule</i> .	υ, as in English <i>put</i> .

These values correspond exactly to the recommendations of B (see p. 9). If it is desired to avoid Greek characters, ο, and ä, the following alternate system is recommended:

a, as in English <i>father</i> .	á, as in English <i>but</i> .
ã, as in English <i>hat</i> .	
ê, as in English <i>fate</i> .	e, as in English <i>met</i> .
î, as in English <i>pique</i> .	i, as in English <i>pin</i> .
ô, as in English <i>note</i> .	o, as in English <i>not</i> (better as <i>o</i> in German <i>voll</i>).
û, as in English <i>rule</i> .	u, as in English <i>put</i> .

For vowel qualities due to mixed positions, such as the unlauded *o* and *u* in German, two dots above the letter are recommended (*ö*).

The obscure vowel, found for instance in English *a* of *idea*, may be rendered by *ə* (turned *e*).

Vowels of any timbre as determined by the shape of the mouth cavity may be further modified by the addition of the resonance chamber of the nose. Such nasal quality in vowels (as in the French nasalized vowels) may be indicated by adding beneath the letter a hook turning to the right (*q*).

It is to be understood that if only one of the qualities usually associated with a roman letter occurs in the language in question, that letter is to be used without a diacritical mark (similarly, *o* is to be used instead of turned *c* (*ç*) if there is only an open *o* in the language).

2. *Duration*.—The duration or quantity of vowel sounds, often an essential matter, may be indicated by placing a mark after the vowel. It is recommended that a turned period (*a·*) or a colon (*a:*) be used for vowels long in duration, and a breve (*a[˘]*) for those unusually short. It is important that these marks be used after the vowels to avoid confusion between duration and quality or timbre, since they are not necessarily connected, as is generally assumed to be the case in English.

3. *Pitch*.—In certain languages vowel sounds are distinguished from each other by definite variations in pitch. When such variations of pitch are essential, the acute accent over the vowel (*á*) should be used for high pitch, and grave (*à*) for low pitch, the circumflex (*â*) for falling pitch, and the inverted circumflex (*ã*) for rising pitch. When it becomes necessary in the recording of a language to use these accents to represent pitch, similar diacritical marks for quality over the vowels are best avoided.

4. *Weak vowels*.—Vowels which are of full duration and strength but not voiced, such as whispered vowels, may well be represented by small capitals. When vowels are slighted in the force of enunciation, but are voiced, exponent vowels should be used (*wⁱ*).

5. *Stress*.—Where variations in stress are prominent they may be indicated by placing the acute accent (') after the vowel. Secondary

accents may be indicated by the grave accent (`). It should be remembered that stress accent is exceptionally marked in English and that it is less pronounced and plays a less important rôle in many American languages. Unless the indication of stress is necessary to distinguish one word from another, it need not be printed each time a word appears in texts.

II. CONSONANTS

1. *Stops*.—The consonants that are usually known as stops, those in which the stream of breath is completely checked for a moment by a closure of the mouth passage, are classified in various ways.

Various organs or parts of organs are employed: both lips, the tip of the tongue against the teeth or palate, the back of the tongue against the palate, the back of the tongue against the velum. The sounds resulting from the release of the contact of these various mouth parts have well-known and distinct qualities, such as the bilabial sounds of *p* and *b*, the dental sounds of *t* and *d*, the palatal sounds of *k* and *g*, and the velar sounds, not found, however, in English.

Various modifications of these stops uttered in the four positions are recognized, and may be grouped in definite series. If the vocal cords are not closed and are not in operation during the uttering of the consonant, it is known as a surd. If the vocal cords are closed and vibrating during the entire time occupied in articulating the sound, it is a sonant. In many Indian languages sounds occur that to the English ear appear now a surd and now a sonant. These stops are called intermediates, and should be consistently represented by definite symbols. Small capitals of the sonant symbols are recommended for these. The ordinary *b*, *d*, *g*, may be used when only intermediate surds and not sonants occur. Surd consonants are frequently followed by a strong expiration of breath, and are called aspirated in consequence. Unaspirated surds are usually difficult to distinguish from intermediates.

Many Indian languages have a series of stopped consonants quite foreign to European ears. In addition to and during the usual closure of the mouth characteristic of the particular sound, there is a closure of the glottis. The air thus confined in the mouth is compressed and escapes with abruptness when the stop is released. These glottalized consonants may be indicated by following apostrophe (*p'*).

The following system of recording the stopped consonants is recommended:

	Sonant	Intermediate	Surd	Surd aspirated	Glottalized
Bilabial	b	B	p	p'	p'
Dental	d	D	t	t'	t'
Palatal	g	G	k	k'	k'
Velar	ḡ	Ḡ	q or ḳ	q' or ḳ'	q' or ḳ'

Labialized and palatalized palatals and velars may be indicated respectively by adding *y* and *w* to the consonantal characters. Thus *gy* represents palatalized *g*, *ky'* glottalized palatalized *k*, and *qw* labialized velar *k*.

2. *Nasals*.—Sounds having closures at the same points and involving the same mouth parts may be uttered with the passage through the nose unimpeded. They may be continuously sounded through the nose or only released through the nose by a lowering of the velum. The following characters will ordinarily be found to be adequate: bilabial, *m*; dental, *n*; palatal, *ṅ*; velar, *ṇ*.

3. *Spirants*.—Consonants of another sort derive their chief distinctive qualities from the agitation of the mouth parts which by their approximation at certain points form definite strictures in the mouth passage. They are called spirants or fricatives. They fall generally into the same classes and series obtaining for stop consonants. When considered as to the organs involved in their production they are bilabial, labio-dentals (lower lip against the upper teeth), interdental (tip of the tongue on the points of the upper teeth), dental sibilants (the tip of the tongue just back of the upper teeth), palatal sibilants (the fore part of the tongue with its tip turned down approaching the fore part of the palate), palatals (the back of the tongue approaching the palate), velar (the back of the tongue approaching the velum).

These spirant sounds may be and usually are both surd and sonant for each position. Less frequently they are glottally affected. The following characters are recommended:

	Sonant	Surd	Glottalized
Bilabial ¹	v	f	f'
Labio-dental			
Interdental	θ	θ	θ'
Dental sibilant	z	s	s'
Prepalatal sibilant	j	c	c'
Palatal	γ	x	x'
Velar	ḡ	ḡ	ḡ'

4. *Affricatives*.—A series of sounds closely related to the spirants are generally called affricatives. Initially they are like stops, except

¹ Both forms are not likely to occur in the same language and *v* and *f* may be used for either. Proper definition should be given.

that they are released through the mouth positions of the corresponding spirants into which they immediately merge. It has been customary to write them with two letters, as if they were compound sounds. Were sufficient characters available, it would be better to make use of a single symbol. For practical reasons it is recommended that the following combinations be used:

	Sonant	Surd	Glottalized
Bilabial	bv	pf	pf'
Interdental	dθ	tθ	tθ'
Dental	dz	ts	ts'
Prepalatal	dj	tc	tc'
Palatal	gɣ	kx	kx'
Velar	g̃ɣ	qx or k̃x	qx' or k̃x'

5. *Semivowels*.—Closely associated with the bilabial and palatal spirants are two sounds produced with less evident agitation of the approximated surfaces. These are the semivowels, *w* and *y*. They are frequently voiceless, when a small capital *y* may be used and an italic *w*, since small capital is not sufficiently distinct from lower case *w*.

6. *Trills*.—At various points where the mouth passage is constricted a mouth part may be bodily vibrated. When the tip of the tongue is turned up toward the palate and allowed to vibrate in a current of air, *r*-like sounds are produced. The tip of the velum, the uvula, may be caused to vibrate in a similar manner, resulting in the uvular *r* heard in some parts of Germany and France. The following symbols are recommended: tongue tip, sonant *r*; surd *κ* (small capital); uvular, sonant *r̃*; surd *R*.

The surd velar *r* is hardly to be distinguished from the surd velar spirant, since the uvula may vibrate in the surd spirant also.

7. *Laterals*.—The consonant sounds so far discussed are occasioned by the release of stops, or by narrow passages in the middle line in the mouth. There are other sounds made at the side of the mouth between the teeth and the edge of the tongue. The best known is an *l* sound found in English and all European languages. It is a sonant and is given a part of its quality at least by a movement of the side of the tongue similar to that of the tip of the tongue in the *r* sounds.

In many of the American languages there are lateral spirants made between the side of the tongue and the upper teeth. The spirant quality is pronounced only when surd. The sonant spirants approximate the "liquid" or trilled *l* of English. These lateral spirants

may be preceded by a closure forming an affricative similar to the medial affricatives. The symbols recommended are the following:

	Sonant	Surd	Glottalized
Lateral trill	l	.	
Lateral spirant		ɫ or L ¹	ɫ' or L'
Lateral affricative	dl	tt or tL	tɫ' or tL'

8. *Glottal*.—In American languages a peculiar hiatus is frequently found between vowels, and a similar cessation of the breath precedes and follows vowels. This closure is of the glottis, and is in all probability caused by the folding of the epiglottis over the glottis, as is the case in swallowing. It is recommended that the apostrophe (') be used. As noted above, this glottal closure also occurs with glottalized consonants.

A glottal spirant, evidently caused by the agitation of the relaxed vocal cords during the forcible expiration of the breath, does not differ particularly from the *h* of English. Strong aspiration should be indicated by *h*, weak aspiration by breathing (').

B. RULES FOR THE MORE COMPLETE SYSTEM

DIACRITICAL MARKS USED INDEPENDENTLY

1. As a sign for long vowel or consonant, it is recommended that the inverted period (·) be used after a letter. For more than ordinary length, a colon (:) may be used after a letter. Thus, *a·* would denote long *a*; *a:* would denote excessively long *a*. Excessive length of non-grammatical significance, such as is often made use of for rhetorical purposes, may be expressed by plus (+). Characters without explicit signs of length are to be considered as short. Excessive shortness of vowels is to be indicated, where it seems advisable to do so, by a small superior breve (˘) immediately after the letter. It is to be recommended that it be printed small and close to the preceding letter, so as not to sprawl the word.

2. Main and secondary stress accents are to be indicated by acute (´) and grave (`) respectively, which are to be placed after the vowel or syllabic consonant affected. Where an accent and a mark of length apply to the same vowel, it is recommended that the two symbols be united into a single symbol, so as to avoid sprawling the word. Thus, [˘]á and á˘.

3. A period on the line is to be used between characters normally forming diphthongs or affricatives, when it is desired to indicate that each of the sounds represented has its own (syllabic) value. Thus,

¹Small capital L.

a.i is non-diphthongal *a* plus *i*, *ai* being the corresponding diphthong. Similarly, *ts* is the non-affricative *t* plus *s*, corresponding to the affricative *ts*.

4. Hyphens should not be used for phonetic purposes. They may, however, be used to indicate morphological analysis. Where, in continuous text, it seems advisable to indicate somewhat loosely affixed elements (prefixes and suffixes not thoroughly welded with stem) by means of hyphens, double hyphens may be used at the ends of lines to indicate a break in the word not meant to be of morphologic significance.

VOWELS

5. Pitch accent, where indicated at all, should be expressed by means of diacritical marks over the vowel. These diacritical marks are also to be used over sonant continuants (such as *l*, *m*, *n*, *w*, *z*) where these bear the pitch accent. The fundamental difference between the system of pitch accent here recommended (the same as has been fully described by Father W. Schmidt in various articles in "Anthropos") and that of indicating stress is that the diacritical marks for the former stand immediately above the letter, whereas those for the latter follow. High pitch is to be indicated by an acute accent (´) over the letter; low pitch is to be indicated by a grave accent (`) over the letter; falling accent from high to low is to be indicated by a combination of the acute and the grave, i. e., by the circumflex accent (^); rising accent from low to high is to be indicated by a combination of the grave and acute accents, i. e., by the inverted circumflex accent (˘). When it is necessary to indicate middle pitch, this may be done by a vertical line above the vowel (ˊ).

6. Voiceless vowels, that is, aspiration with definite vocalic timbre, should be indicated by means of small capitals of corresponding vowels.

7. Nasalization should be expressed by means of a hook, turned to the right, placed under the vowel or voiced continuant. Thus, nasalized *a* is indicated by *ḡ*. This device may also be employed to indicate semi-nasalized consonants. Thus, *ḃ* would indicate semi-nasalized *b*, acoustically midway between *b* and *m*.

8. What might be rather vaguely termed subsidiary or weakly articulated vowels of various sorts are to be expressed by means of superior or inferior characters. Rearticulations (such as often occur in Indian languages, e. g., *a^a* in Takelma), vocalic glides, murmured or echo vowels pronounced with feeble energy, yet not

entirely voiceless (such as often occur in America after glottal stops), vocalic resonance of preceding consonants, and whispered vowels are all to be expressed by superior or inferior vowels. The exact usage of superior or inferior vowels should be carefully explained in the key in every case, so as to avoid possible confusion. If it is desired to distinguish between vocalic timbres and weakly articulated voiceless vowels on the one hand and vocalic glides and weakly articulated voiced vowels on the other hand, superior vowels (^a) may be used for the former, inferior vowels (_a) for the latter.

9. The representation of vocalic qualities here recommended attempts to combine, as far as possible, the requirements of ordinary usage with the demands of a consistent scientific system. The phonetic analysis serving as a basis of the system has been taken from Sweet's "Primer of Phonetics."

The five vocalic symbols serving as a starting point in this system are: *a*, pronounced as in German *Mann*; *e*, pronounced as in French *été*; *i*, pronounced as in French *fini*; *o*, pronounced as in German *so*; and *u*, pronounced as in German *gut*.

Roughly speaking, the Greek forms of these letters indicate the open (Sweet's wide) forms of the same sounds. For Greek omikron, which would be easily confused with *o*, inverted *c* (ϝ) is substituted. Thus, upsilon (υ) represents *u* of English *full*; turned *c* (ϝ) represents *o* of German *voll*; epsilon (ε) represents *e* of English *met*; iota (ι) represents *i* of English *it*; alpha (α) represents *u* of English *but*. According to Sweet's phonetic analysis, *a* is the wide form of *a*, but general usage demands the retention of *a* for the value here recommended. The principle of simplicity (see last paragraph of A, I, 1) will, in most cases, involve considerable simplification of this system. Thus, where but one form of *i*-vowel is in use, the simple symbol *i* will be used for either the close or open variety.

Rounded forms of front vowels are to be indicated by the umlaut (¨) over the corresponding rounded back vowels. Thus, *ü* indicates the vowel of German *kühl* or French *lune*; *ö* represents the vowel of German *schön* or French *bleu*; *ü* represents the first vowel of German *Mütze*; *ö* represents the first vowel of German *Götter*.

The use of the umlaut may be extended to indicate high-back-unrounded vowels, the corresponding high-front-unrounded vowels being taken as points of departure. Thus, *ï* and *ï* represent the high-back-unrounded representatives of *i* and *ι*, in other words, the unrounded forms of *u* and *v*. Both of these sounds occur, for example, in Shoshonean.

A natural extension of the system, as developed up to this point, is the use of a single dot over a vowel to indicate articulations midway between front and back, that is, all vowels belonging to Sweet's "mixed" category. Thus, *ü* represents the vowel acoustically midway between *u* and *ü*, an example of which is *ü* of Swedish *hus*. To avoid confusion with ordinary *i*, the superior dot of the *i* of this series should be printed a little to the left (*i*).

For the low-back-narrow-rounded vowel (the English *aw* of *law*), omega (ω) may be used; the corresponding low-front-narrow-rounded vowel, the *eu* of French *peur*, is indicated by $\ddot{\omega}$, which thus falls in line with *ü* and *ö*. The vowel midway in position between ω and $\ddot{\omega}$ is $\dot{\omega}$.

For the other vowels of Sweet's scheme no specific symbols are recommended as yet.

An obscure vowel of undefined quality may be represented by turned *e*, i. e., *ɛ*.

CONSONANTS

10. Small capitals are to be regularly used to indicate voiceless forms of consonants ordinarily voiced (lateral continuants, trilled consonants, nasal continuants). Thus, *L*, *M*, *N*, and *R* indicate voiceless *l*, *m*, *n*, and *r*, respectively. In the case of stops and spirants, where distinct characters are used for corresponding voiced and voiceless forms, the small capital is to be used to indicate a surd-sonant intermediate (intermediate consonants here include voiceless consonants pronounced with stress ordinarily characteristic of sonant consonants, also surd consonants that are sonant at the moment of release). Thus, *G* indicates the intermediate between sonant *g* and surd *k*; similarly, *Z* (slightly higher than lower case *z*) indicates the consonant intermediate between *s* and *ʒ*, equivalent to J. O. Dorsey's turned *s*.

Weakly articulated or barely audible consonants, also consonantic glides, are to be represented by superior letters; thus, Malecite *^mm*- and Wyandot *ⁿd*-.

11. A point beneath the consonant is regularly used to indicate a point of articulation posterior to the standard point of articulation adopted for the simple character. Thus, *ḍ* represents a *d* pronounced with the tip of the tongue articulating against the palate back of the alveolar ridge, that is, the cerebral *d*. Similarly, *ḳ* may be used to indicate a velar *k*.

A semicircle beneath the letter (*˘*) is regularly used to indicate a point of articulation in front of the standard one adopted for the

sound indicated by the simple character. Thus, t represents dental t , as in Slavic; g indicates prepalatal g .

12. Four main types of articulation are recognized for the stopped and affricative consonants of each position; the sonant, the surd, the intermediate (indicated by small capital forms of letters representing sonant stops), and aspirated surd (represented by the sign of aspiration (‘) following the symbol for voiceless surd stop). Other types of consonants involving synchronous articulations will be discussed below.

13. Three main positions are recognized for stopped consonants: the bilabial, the linguo-dental or linguo-alveolar, and the linguo-palatal or guttural. The sonant of the first position is indicated by b , its corresponding surd by p , intermediate by B , aspirated surd by p' . The voiced nasal continuant of this series is represented by m , its voiceless form by M ; the semi-nasal stop may be indicated by b .

14. In parallel fashion, d , t , D , and t' indicate corresponding consonants of alveolar position (the tip or blade of the tongue and the alveolar ridge are here taken as the standard point of articulation for the linguo-dental and linguo-alveolar consonants). d , t , D , t' indicate the corresponding sounds for the true dental series. d , t , D , and t' indicate the corresponding sounds for the cerebral series.

The voiced and unvoiced nasals for the three positions defined above are respectively n , N ; n , N ; n , N .

15. Between the alveolar and guttural consonants is a set of dorsal consonants, produced by the upper surface of the tongue articulating against the forward part of the palate. Such consonants are indicated by Greek letters. The four stops parallel to those enumerated for the preceding positions are δ , τ , Δ , and τ' ; the corresponding nasals are ν and small capital ν (inasmuch as capital ν is identical with English N , it is recommended that the lower case ν be used in somewhat enlarged form).

δ , and correspondingly for the other characters of the series, would indicate dorsal consonants produced by articulating with the middle surface of the tongue against or just back of the teeth; δ , and correspondingly for the other characters of the series, would indicate dorsal consonant produced by articulating with the middle surface of the tongue against the back part of the palate.

16. The symbols, g , k , G , and k' indicate the guttural consonants produced by articulating with the back of the tongue against the posterior part of the palate; the position given by g of English *good*

may be taken as the standard. The corresponding voiced nasal (*ng* of English *sing*) is indicated by η ; its voiceless form by η .

The front palatal series (illustrated by *k* of English *kin*, or still more markedly by the anterior palatal *k*-sounds of several West Coast languages) is represented by ξ , ξ , ξ , ξ ; and the corresponding nasals by η and η .

The back palatal series, produced by the back of the tongue articulating against the velum, is represented by ξ , ξ (or q), ξ , and ξ ; the corresponding nasals are η and η .

17. The rounded voiced bilabial spirant, or semivocalic *u*, is to be represented by ω ; its voiceless correspondent, *hw* (i. e., as used in transcriptions of Gothic for *hw*). Unrounded bilabial spirants (Eskimo *f* and *v*, according to Kleinschmidt's orthography) are to be represented by ϕ (voiceless) and β (voiced). The dento-labial spirants are respectively represented by *f* and *v*.

The interdental spirants (*th* of English *thick* and *then*) are to be indicated respectively by the two forms of Greek theta, θ (voiceless) and θ (voiced). The spirants corresponding to the various *t*-sounds are to be represented by s and s ; variations of position may be indicated as in the case of *t*-sounds, s and s representing the ordinary alveolar sibilants, s and s the dental sibilants, and s and s the corresponding cerebral sibilants. Dorsal sibilants may be represented by σ (voiceless) and ξ (voiced), which symbols, however, need be used only when it is necessary to distinguish explicitly between dorsal and apical sibilants; as in the case of the other sibilants, forward and backward points of articulation may be indicated by σ , ξ , and σ , ξ , respectively.

The spirants corresponding to the various *k*-series are to be represented by Greek χ (or x) and γ , which correspond in position to *k* and *g*. The prepalatal spirants are to be indicated by χ (as in German *ich*) and γ (*y*, pronounced as in English *yes*, will be the ordinary symbol for the voiced spirant of this position, but it will be convenient sometimes to use the symbol γ for a voiced spirant of the same or slightly posterior position of non-vocalic effect); for χ may, where convenient, be substituted x . The back palatal spirants are χ and γ , for the former of which may, where convenient, be substituted x .

Spirants that are intermediate, as regards voicing, between typical surd and sonant spirants, may be represented by small capitals of the corresponding characters for voiced spirants.

Any spirant may be nasalized, to indicate which the hook, as usual, is employed. Thus, ξ would represent the ξ of English *zeal*, but nasalized.

18. The sibilants of thickish quality (English *sh* and *z* of *ship* and *azure*) are to be represented by *c* (voiceless) and *j* (voiced): Forward and backward articulations of these sounds are respectively represented by ζ , \tilde{j} ; ζ , \tilde{j} (cerebral *c*-sounds).

19. Affricatives, that is, consonantal diphthongs consisting of stop followed by spirant of identical position, should always be written analytically, that is, both stop and spirant should be represented. Thus, *pφ* is the voiceless affricative of unrounded bilabial position; *dz* is the voiced affricative of *t*-position. The same manner of writing applies to affricatives the spirantal element of which is a *c*-sound.

If the stop and following homorganic spirant do not form an affricative but preserve their individuality, a period is to be put between them; thus, *t.s*.

20. All lateral sounds are to be indicated by *l* or *l*-like characters, the standard *l* being defined as an apical voiced *l* of alveolar position; the corresponding voiceless sound is *L* or *t*. The corresponding dental and cerebral *l*-sounds are $\underset{d}{l}$, $\underset{c}{L}$, ($\underset{d}{t}$); and $\underset{d}{l}$, $\underset{c}{L}$, ($\underset{d}{t}$), respectively.

Dorsal *l*-sounds are to be indicated by λ (voiced) and small capital lambda, Λ (unvoiced). Forward and backward articulations of dorsal *l* may be represented by means of $\underset{f}{\lambda}$, $\underset{b}{\Lambda}$; and $\underset{f}{\lambda}$ (this would be the back-*l* found in many Slavic languages), $\underset{b}{\Lambda}$.

Lateral affricatives, that is, *t*- or *k*- stop merging into lateral spirants, should be indicated analytically as in the case of all affricatives. *tt* and *dl* would be the normal characters used for the voiceless and voiced dorsal lateral affricatives, while the systematic rendering of these sounds is $\tau\Lambda$ and $\delta\lambda$. *kt*-sounds may also occur.

Nasalized laterals can be indicated by $\underset{~}{l}$ and correspondingly for other *l*-sounds.

21. All rolled consonants (*r*-sounds), whether markedly trilled or not, are to be indicated by *r* or *r*-like characters. *r* indicates a voiced tongue-tipped rolled consonant in alveolar position; $\underset{d}{r}$ is the corresponding sound of dental position; $\underset{c}{r}$ the cerebral *r*. The corresponding voiceless consonants are respectively *R*, $\underset{d}{R}$, and $\underset{c}{R}$.

The uvular *r* is to be indicated by Greek $\rho\bar{o}$ (ρ); the corresponding voiceless uvular *r*-sound is to be represented by small capital (P), which is best printed as small capital italic p : *P*.

If it is necessary to distinguish untrilled (or weakly trilled) from markedly trilled *r*-sounds, a macron is to be put above the character to indicate the latter type. Thus, \bar{r} denotes strongly trilled cerebral *r*.

Nasalization, as usual, is to be expressed by the hook beneath a character. Thus, $\underset{~}{r}$ indicates nasalized uvular *r*.

22. Aspiration, as already indicated above in treating of aspirated surds, in serving as a consonantal release or concluding a syllable after a vowel, is to be indicated by breathing ('). Aspiration as an independent consonant is to be indicated by *h* when strong, by breathing (') when weak.

Nasalized breath may be represented by ' or h' . Nasalized breath with definite vocalic timbre may be indicated by putting the sign for aspiration under the vocalic character: thus, h' . Voiceless stopped consonants with nasalized breath release and continuance of oral contact during release may be indicated by putting the sign for nasalization under the character for the stopped consonant: thus, p' .

The peculiar strangulated-sounding *h*-sounds found in Nootka and Arabic may be indicated by *h*.

23. The glottal (epiglottal) stop is to be indicated by an apostrophe, '. Broken vowels, that is vowels cut in two by a glottal stop, may be rendered a'a or a' , and correspondingly for other vowels; the latter orthography is to be employed when the post-glottal part of the vowel is weakly articulated (murmured or whispered).

A simple glottalized consonant, that is, a voiceless consonant pronounced with simultaneous closure of the glottis, and whose release also is simultaneous with that of the glottal closure, may be indicated by putting the ' over the character; thus, p' indicates a glottalized *p* (such consonants are found in Southern Paiute and in Delaware). p' , and correspondingly for other consonants, indicates a consonant whose release is immediately followed by a glottal closure.

A common type of glottalized consonant in American languages is the so-called "fortis." These consonants are generally pronounced with simultaneous glottal closure and with glottal release subsequent to that of the oral release. We may distinguish here between the simple glottalized stop and the true fortis produced with very high pressure and accompanying increased muscular tension of the articulating organs, which gives to the sound its abrupt exploded character. It is recommended that the orthography already in use (namely, p! , and correspondingly for other consonants) be retained for the true fortis; p' (and correspondingly for other consonants) should be used to indicate the more weakly articulated glottalized consonant of this type.

A "glottal trill," that is, a vowel broken up by a rapidly succeeding series of glottal closures (German "Knarrstimme"), may be indi-

cated by putting the apostrophe over the vowel. Thus, \acute{a} is glottally trilled a .

A peculiar strangled-sounding glottal stop found in Nootka, and bearing the same relation to the ordinary glottal stop that h bears to h , may be indicated by ' .

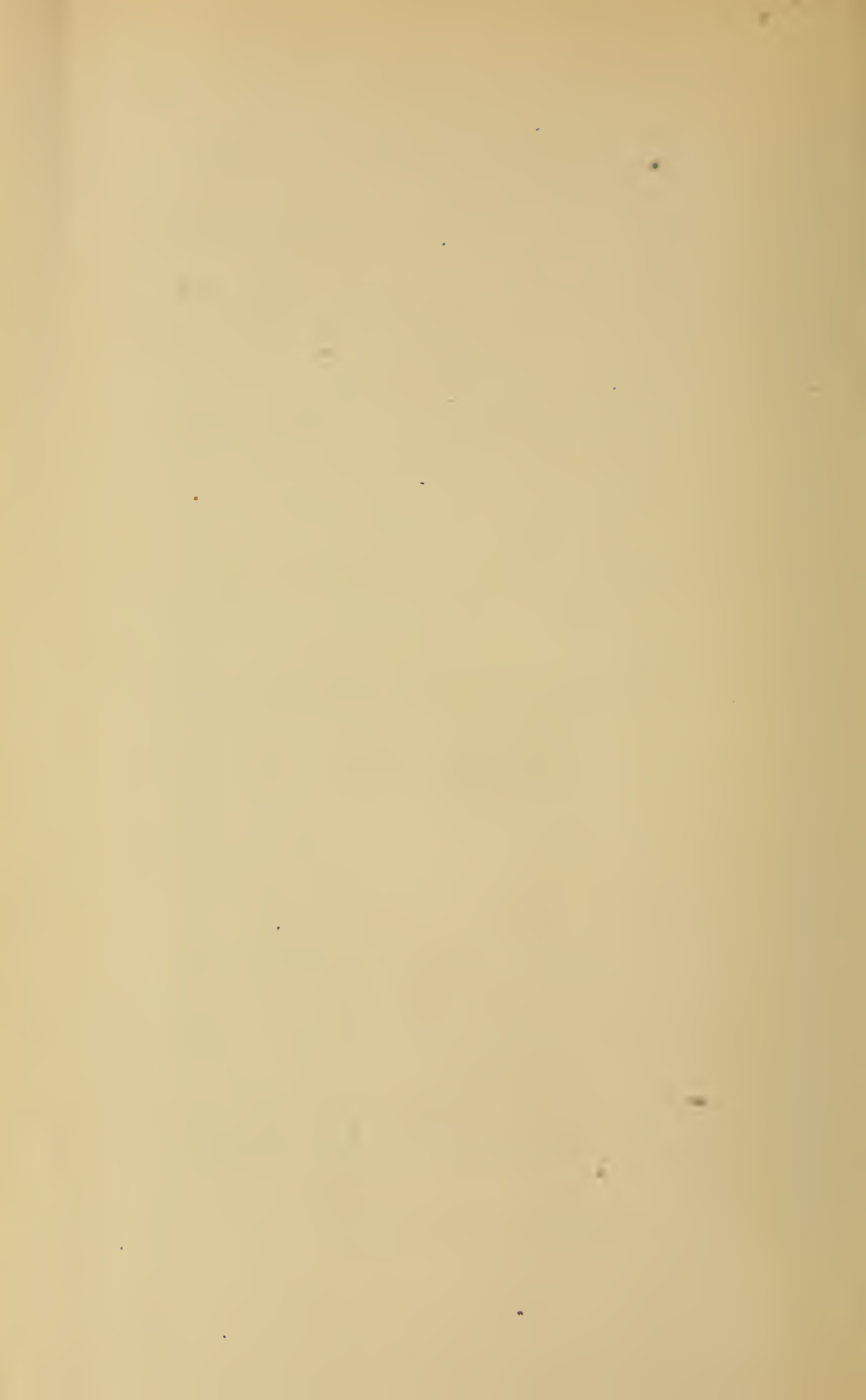
24. Special modifications of consonants may be brought about by synchronous articulations, that is, by the simultaneous action of some other part of the speech apparatus than is primarily involved in the production of the consonant. Nasalized and glottalized consonants, two types of such "doubly articulated" consonants, have already been discussed. Aside from glottalization, all such synchronous articulations should be indicated by diacritical marks beneath the character or by closely following inferior characters. This method seems preferable to indicating them by means of superior characters, as in this way confusion is avoided with consonantal glides.

Labialized consonants, that is, consonants pronounced with simultaneous lip-rounding, are to be indicated by means of inferior w closely following the character. Thus, l_w indicates an l pronounced with markedly rounded lips; similarly, k_w indicates a k with simultaneous lip-rounding (not to be confused, of course, with kw).

Palatalized consonants, that is, consonants modified by the simultaneous articulation of a large part of the surface of the tongue against the palate (in other words, by the tongue taking y -position), are to be indicated by closely following inferior y . Thus, n_y indicates a palatalized dental n . The ordinary so-called "palatal" l and n are probably best considered as palatalized dorsal l and n and should thus, strictly speaking, be indicated by λ_y (Italian gl) and ν_y (Italian gn); l_y and n_y would, however, be the normal methods of representing these consonants.

In some languages a vowel or consonant may be given a distinct velar or guttural resonance, due to the fact that during the production of the sound an approximation is made of the tongue and velum or tongue and posterior palate to velar or guttural closure without such closure being actually attained. No symbol is expressly recommended here for gutturalized and velarized sounds, but these sounds, where noted, should be definitely indicated in some way.

25. If a consonant forms its own syllable without a preceding or following vowel, that fact may be indicated by placing a small circle under the character. Thus, $\underset{\circ}{n}$ indicates syllabic n , as in English *button* ($ba'tn$).



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Vowels, based on H. Sweet.

1. high-back-narrow i (e.g. Southern Paiute paʔi ^h "fish")	7. high-mixed-narrow ɨ (e.g. Welsh <u>un</u>)	13. high-front-narrow i (e.g. French <u>fini</u>)	19. high-back-wide ɨ̃ (e.g. Southern Paiute piʔa ^h "in which place")	25. high-mixed-wide ɨ̃ (e.g. English <u>bit</u>)	31. high-front-wide ɨ̃ (e.g. English <u>bit</u>)
2. mid-back-narrow ɔ (e.g. English <u>but</u>)	8. mid-mixed-narrow ɔ̃ (e.g. German <u>Gabe</u>)	14. mid-front-narrow e (e.g. French <u>été</u>)	20. mid-back-wide a (e.g. German <u>Mann</u>)	26. mid-mixed-wide ɔ̃ (e.g. English <u>butter</u>)	32. mid-front-wide e (e.g. English <u>men</u>)
3. low-back-narrow (e.g. Cockney <u>park</u> ; French <u>pâte</u>)	9. low-mixed-narrow (e.g. English <u>sir</u> -Sweet)	15. low-front-narrow (e.g. English <u>air</u>)	21. low-back-wide (e.g. Norwegian <u>mat</u>)	27. low-mixed-wide ä (e.g. Portuguese <u>cama</u> ; practically French <u>patte</u>)	33. low-front-wide ä (e.g. English <u>man</u>)
4. high-back-narrow-round u (e.g. German <u>gut</u>)	10. high-mixed-narrow-round ü (e.g. Swedish <u>hus</u>)	16. high-front-narrow-round ü (e.g. French <u>lune</u>)	22. high-back-wide-round ũ (e.g. English <u>put</u>)	28. high-mixed-wide-round ü̃ (e.g. Takelma <u>ɨ̃ɣi</u> "give me!")	34. high-front-wide-round ü̃ (e.g. German <u>Mütze</u>)
5. mid-back-narrow-round o (e.g. German <u>so</u>)	11. mid-mixed-narrow-round ö (e.g. French <u>peu</u>)	17. mid-front-narrow-round ö (e.g. French <u>peu</u>)	23. mid-back-wide-round õ (e.g. German <u>voll</u>)	29. mid-mixed-wide-round ö̃ (e.g. practically German <u>Götter</u>)	35. mid-front-wide-round ö̃ (e.g. practically German <u>Götter</u>)
6. low-back-narrow-round ɔ̃ (e.g. English <u>law</u>)	12. low-mixed-narrow-round ɔ̃ (e.g. French <u>peur</u>)	18. low-front-narrow-round ɔ̃ (e.g. French <u>peur</u>)	24. low-back-wide-round (e.g. English <u>not</u> -Sweet)	30. low-mixed-wide-round (e.g. Swedish <u>upp</u>)	36. low-front-wide-round

<p>1. The first part of the book is devoted to a general introduction to the subject of the history of the world.</p>	<p>2. The second part of the book is devoted to a detailed account of the history of the world from the beginning of the world to the present time.</p>
<p>3. The third part of the book is devoted to a detailed account of the history of the world from the beginning of the world to the present time.</p>	<p>4. The fourth part of the book is devoted to a detailed account of the history of the world from the beginning of the world to the present time.</p>
<p>5. The fifth part of the book is devoted to a detailed account of the history of the world from the beginning of the world to the present time.</p>	<p>6. The sixth part of the book is devoted to a detailed account of the history of the world from the beginning of the world to the present time.</p>
<p>7. The seventh part of the book is devoted to a detailed account of the history of the world from the beginning of the world to the present time.</p>	<p>8. The eighth part of the book is devoted to a detailed account of the history of the world from the beginning of the world to the present time.</p>
<p>9. The ninth part of the book is devoted to a detailed account of the history of the world from the beginning of the world to the present time.</p>	<p>10. The tenth part of the book is devoted to a detailed account of the history of the world from the beginning of the world to the present time.</p>
<p>11. The eleventh part of the book is devoted to a detailed account of the history of the world from the beginning of the world to the present time.</p>	<p>12. The twelfth part of the book is devoted to a detailed account of the history of the world from the beginning of the world to the present time.</p>

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For balance forward



	Stops					Spirants			Affricatives			Nasals		Laterals			Lateral Affricatives			Rolled Consonants		
	Surd	Sonant	Intermed.	Aspir.	Glottalized	Surd	Sonant	Glott.	Surd	Sonant	Glott.*	Surd	Sonant	Surd	Sonant	Glott.	Surd	Sonant	Glott.	Surd	Sonant	Glott.
Bilabial (rounded)	p _w	b _w	B _w	p _w ^c	p̥ _w , p̥ _w !	ɸ	w	*ɸ!	ph _w	b _w	ph _w !	m _w	m _w									
Bilabial (unrounded)	p	b	B	p ^c	p̥, p!	ɸ	β	ɸ!	pɸ	bβ	pɸ!	m	m									
Dento-labial						f	v	f!	pf	bv	pf!											
Interdental						θ	ð	θ!	tθ	dð	tθ!											
Linguo-dental	ṭ	ḍ	Ḍ	ṭ ^c	ṭ̥, ṭ!	ʃ	ʒ	ʃ!	tʃ	dʒ	tʃ!	ɳ	ɳ	ḷ, Ḷ	ḷ	*ṭ!	ṭṭ	ḍḷ	*ṭṭ!	ṛ	ṛ	*ṛ!
Linguo-alveolar	t	d	D	t ^c	ṭ, t!	s	z	s!	ts	dz	ts!	N	n	t, L	l	t!	ṭṭ	ḍḷ	ṭṭ!	R	r	R!
Cerebral	ṭ̥	ḍ̥	Ḍ̥	ṭ̥ ^c	ṭ̥̥, ṭ̥!	ʃ̥	ʒ̥	ʃ̥!	ṭ̥ʃ̥	ḍ̥ʒ̥	ṭ̥ʃ̥!	ɳ̥	ɳ̥	ṭ̥, Ḷ̥	ḷ̥	ṭ̥!	ṭ̥ṭ̥	ḍ̥ḷ̥	ṭ̥ṭ̥!	R̥	r̥	R̥!
Dorso-dental	ʈ	ɖ	Ḍ	ʈ ^c	ʈ̥, ʈ!	ʈ̣	ʈ̣	ʈ̣!	ʈʈ̣	ɖɖ̣	ʈʈ̣!	ɳ̣	ɳ̣	ʈ̣	ʈ̣	ʈ̣!	ʈ̣ʈ̣	ɖ̣ʈ̣	ʈ̣ʈ̣!			
Dorsal	ʀ	ʁ	Ṙ	ʀ ^c	ʀ̥, ʀ!	ʀ̣	ʀ̣	ʀ̣!	ʀʀ̣	ʁʀ̣	ʀʀ̣!	ɳ̣	ɳ̣	ʀ̣	ʀ̣	ʀ̣!	ʀ̣ʀ̣	ʁ̣ʀ̣	ʀ̣ʀ̣!			
Dorso-palatal	ʈ̣	ɖ̣	Ḍ̣	ʈ̣ ^c	ʈ̣̥, ʈ̣!	ʈ̣̣	ʈ̣̣	ʈ̣̣!	ʈ̣̣ʈ̣̣	ɖ̣̣ɖ̣̣	ʈ̣̣ʈ̣̣!	ɳ̣̣	ɳ̣̣	ʈ̣̣̣	ʈ̣̣̣	ʈ̣̣̣!	ʈ̣̣̣ʈ̣̣̣	ɖ̣̣̣ʈ̣̣̣	ʈ̣̣̣ʈ̣̣̣!			
Anterior c-sounds	(ʈ̣ _y)	(ɖ̣ _y)	(Ḍ̣ _y)	(ʈ̣ _y ^c)	(ʈ̣̥ _y , ʈ̣ _y !)	ç	ʝ	ç!	ʈ̣̣ç	ɖ̣̣ʝ	ʈ̣̣ç!	(ɳ̣ _y)	(ɳ̣ _y)	(ʈ̣̣ _y)	(ʈ̣̣ _y)	(ʈ̣̣ _y !)	(ʈ̣̣̣ _y)	(ɖ̣̣̣ _y)	(ʈ̣̣̣ _y !)			
Mid c-sounds	(ṭ _y)	(ḍ _y)	(Ḍ _y)	(ṭ _y ^c)	(ṭ̥ _y , ṭ _y !)	c	j	c!	ṭ̣c	ḍ̣j	ṭ̣c!	(Ṇ _y)	(Ṇ _y)	(ṭ̣ _y , Ḷ _y)	(ḷ _y)	(ṭ̣ _y !)	(ṭ̣̣ _y)	(ḍ̣̣ _y)	(ṭ̣̣ _y !)			
Posterior c-sounds	(ṭ̣ _y)	(ḍ̣ _y)	(Ḍ̣ _y)	(ṭ̣ _y ^c)	(ṭ̣̥ _y , ṭ̣ _y !)	ç̣	ʝ̣	ç̣!	ʈ̣̣̣ç̣	ɖ̣̣̣ʝ̣	ʈ̣̣̣ç̣!	(Ṇ̣ _y)	(Ṇ̣ _y)	(ṭ̣̣ _y , Ḷ̣ _y)	(ḷ̣ _y)	(ṭ̣̣ _y !)	(ṭ̣̣̣ _y)	(ḍ̣̣̣ _y)	(ṭ̣̣̣ _y !)			
Anterior palatal	ḳ	g̣	G̣	ḳ ^c	ḳ̥, ḳ!	x̣	ɣ̣	x̣!	ḳ̣x̣	g̣̣ɣ̣	ḳ̣x̣!	ɳ̣̣	ɳ̣̣				ḳ̣ṭ̣	g̣̣ḷ̣	ḳ̣ṭ̣!	ɳ̣̣	ɳ̣̣	ɳ̣̣!
Mid-palatal	k	g	G	k ^c	ḳ, k!	x	ɣ	x!	ḳ̣x	g̣̣ɣ	ḳ̣x!	ɳ̣̣	ɳ̣̣				ḳ̣ṭ̣	g̣̣ḷ̣	ḳ̣ṭ̣!	ɳ̣̣	ɳ̣̣	ɳ̣̣!
Back palatal, velar	ḳ̣ (q)	g̣̣	G̣̣	ḳ̣ ^c	ḳ̣̥, ḳ̣!	x̣̣	ɣ̣̣	x̣̣!	ḳ̣̣x̣̣	g̣̣̣ɣ̣̣	ḳ̣̣x̣̣!	ɳ̣̣̣	ɳ̣̣̣				ḳ̣̣ṭ̣̣	g̣̣̣ḷ̣̣	ḳ̣̣ṭ̣̣!	ɳ̣̣̣	ɳ̣̣̣	ɳ̣̣̣!
Glottal	ʔ			ʔ ^c		ʔ̣, h	a (any vowel)		ʔ̣		ʔ̣!									(á)		
Laryngeal	ʕ			ʕ ^c		ḥ	(any vowel with laryngeal resonance)		ʕ̣		ʕ̣!											

* Glottalized aspirants, affricatives, laterals, lateral affricatives, and rolled consonants may also be designated by superscript '̣'. See glottalized stops.