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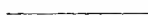
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PROPOSALS

FOR

A MISSIONARY ALPHABET,

SUBMITTED TO

THE ALPHABETICAL CONFERENCES

HELD AT THE RESIDENCE OF CHEVALIER BUNSEN IN
JANUARY 1854.

BY

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PROPOSALS

FOR

A MISSIONARY ALPHABET.

THE want of a standard system of orthography has been experienced by all persons engaged in the study of languages, written or unwritten. The philologist, the historian, the geographer, and more than all the missionary,—he whose message of good tidings is to all nations,—are harassed in their labours by the diversity of alphabets; and the difficulties hence arising may be judged second only to those caused by the diversity of language:—that main barrier, we may confess with Humboldt and with St. Augustine, against the establishment of the Civitas Dei, and the realisation of the idea of Humanity.

Whatever may be thought of the practicability of finally supplanting all existing alphabets by one uniform system of notation, it is at least our duty, and for the members and directors of Missionary Societies a sacred duty, not to increase the existing diversity, but to do all in our power towards preparing the way for the accomplishment of that highest, though as yet indefinite, aim of society towards which Christianity has from the first been striving.

For the practical solution of the problem, “*How to establish one uniform system of notation which shall be acceptable to the scholar, convenient to the missionary, and easy for the printer,*” we must consider three points:—

I. *Which are the principal sounds that can be formed with our organs of speech, and therefore may be expected to occur in any of the dead or living dialects of mankind?*

This is a physiological question.

II. *How can these principal sounds, after proper classification, be expressed by us in writing and printing so as to preserve their physiological value, without creating new typographical difficulties?*

This is a practical question.

III. *How can this physiological alphabet be applied to existing languages, and*

a. *to unwritten dialects;*

This depends on a good ear.

b. *to written dialects;*

This depends on philological research.

Coroll. III. a. In the application of the physiological alphabet to languages not yet fixed by writing, the missionary should be guided entirely by ear, without paying any regard to etymological considerations, which are too apt to mislead even the most accomplished scholar.

III. b. In transcribing languages possessed of an historical orthography, and where, for reasons best known to the archæologist, one sign may represent different sounds, and one sound be expressed by different signs, new and entirely distinct questions are involved, such as must be solved by archæological and philological research. We shall, therefore, discuss this part (III. b.) separately, and distinguish it by the name of "Transliteration," from the usual method of "transcribing" as applied to unwritten tongues.

1.

Which are the principal Sounds that can be formed with our Organs of Speech, and therefore may be expected to occur in any of the dead or living Dialects of Mankind?

On the first point, which must form the basis of the whole, we have the immense advantage that all scholars who have written on it have

arrived at results almost identically the same.* We are here still in the sphere of physical science, where facts are arranged by observation, and observation may be checked by facts so as to exclude individual impressions and national prejudice. The classification of vowels and consonants proposed by modern physiologists is, so far as general principles are concerned, exactly the same as the one contained in Sanskrit grammars composed in the fifth century before Christ, and appended to the different collections of the sacred writings of the Brahmans, — the four Vedas. These grammatical treatises, called “Prâtisâkhyas,” exist in manuscript only, and have not hitherto been published. The classification established by physiologists, as the result of independent research, would receive the most striking confirmation by a translation of these writings, now more than two thousand years old. But, on their own account also, these phonetic treatises deserve to be published. Their observations are derived from a language (the Vaidik Sanskrit) which at that time was studied by means of oral tradition only, and where, in the absence of a written alphabet, the most minute differences of pronunciation had to be watched by the ear, and to be explained and described to the pupil. The language itself, the Sanskrit of that early period, had suffered less from the influence of phonetic corruption than any tongue from which we can derive our observations; nay, the science of phonetics (*Sikshâ*), essential to the young theological student (who was not allowed to learn the Veda from MSS.), had been reduced to a more perfect system in the schools of the Brahmans, in the fifth

* In a very able article by Professor Heise, in *Hofer's Zeitschrift für die Wissenschaft der Sprache*, iv. 1. 1853, the following authorities are quoted:—

Chladni, *Über die Hervorbringung der Menschlichen Sprachlaute*, in *Gilbert's Annalen der Physik*. vol. lxxvi. 1824.

A. J. Ribbeck, *Über die Bildung der Sprachlaute*. Berlin, 1848.

K. M. Rapp, *Versuch einer Physiologie der Sprache*. Stuttgart, 1836.

H. E. Bindseil, *Abhandlungen zur Allgemeinen Vergleichenden Sprachlehre*, Hamburg, 1838

J. Müller, *Elements of Physiology*. London, 1842. vol. ii. p. 1044.

W. Holder, *Elements of Speech: an Essay of Inquiry into the natural Production of Letters*. London, 1669.—This is one of the earliest and best works on the subject.

An excellent account of the researches of the most distinguished physiologists on the human voice, and the formation of letters, is found in Ellis, “*The Alphabet of Nature*.”—A work full of accurate observations and original thought.

century before Christ, than has since been anywhere effected. Our notions on the early civilisation of the East are of so abstract a nature that we must expect to be startled occasionally by facts like these. But we now pass on to the general question.

CONSONANTS AND VOWELS.

If we regard the human voice as a continuous stream of air, emitted as breath from the lungs and changed into vocal sound as it leaves the larynx, this stream itself, as modified by certain positions of the mouth, would represent the vowels. "The vowels," as Professor Wheatstone says, "are formed by the voice modified, but not interrupted, by the various positions of the tongue and the lips." In the consonants, on the contrary, we should have to recognise a number of stops opposing for a moment the free passage of this vocal stream. These consonantal stops, against which the waves of the vowels break themselves more or less distinctly, are produced by barriers formed by the contact of the tongue, the soft palate, the palate, the teeth, and the lips with each other.

CONSONANTS.

Gutturals, Dentals, and Labials.

According to an observation which we find already in Vaidik grammars, the principal consonantal stops in any language are:—

- the guttural (k),
- the dental (t),
- the labial (p).

The pure *guttural* sound, without any regard as yet to its modifications (whether *tenuis*, *media*, *aspirata*, *nasalis*, *semi-vocalis*, or *flatus*), is produced by stopping the stream of sound by means of a contact between the root of the tongue and the throat, or, more correctly, the soft palate, or the *velum pendulum*. The throat is called the "place," the root of the tongue the "instrument," of the *guttural*.

The pure *dental* sound is produced by contact between tongue and teeth. Here the teeth are called the "place," and the tip of the tongue the "instrument."

The pure *labial* sound is produced by contact between the upper and lower lip; the upper lip being the "place," the lower the "instrument."

All consonants, excluding semi-vowels and sibilants or flatus, are formed by a complete contact between the active and passive organ.

Formation of the Tenuis.

If the voice is stopped sharp by the contact of the organs, so as to allow for the moment no breath or sound to escape, the consonant is called *tenuis* (*ψιλόν*), hard or surd (k, t, p).

Formation of the Media.

If the voice is stopped less abruptly, so as to allow a kind of breathing to continue after the first contact has taken place, the consonant is called *media* (*μέσον*), soft or sonant (g, d, b). The soft consonant does not arrest the sound at once, but allows it to be heard during a moment of resistance.

The difference between a surd and sonant consonant is best illustrated by a speaking-machine. "The sound p," as Professor Wheatstone says, "was produced by suddenly removing the left hand from the front of the mouth, which it had previously completely stopped; the sound b, by the same action; but instead of closing the mouth completely, a very minute aperture was left, so that the sound of the reed might not be entirely stifled." This coincides fully with the description given by Mr. Ellis. "In pronouncing ba," he says, "the vowel is uttered simultaneously with the act of relieving the lips from contact, or rather *before* they are quite released. If we separate them before the vowel is uttered, allowing the breath to be condensed during a very brief space of time, the sound pa is heard. There is a similar distinction between ab and ap: in the former the effect of the voice remains throughout the consonant, and we may feel a slight tremor of the lips while it is being produced; in the latter the vowel, properly so called, entirely ceases before the contact is completed."

Formation of Semi-vowels.

If there is only an approach or a very slight contact between the

organs, and the voice is slightly stopped or compressed as it reaches the point of contact, the consonants are called half-consonants or semi-vowels. They are sonant like the media, owing to the process of their formation here described ('h, l, w).

At the end of words and before a tenuis the semi-vowels are frequently pronounced as a flatus, or they become evanescent. In the Dutch 'dag,' we have the nearest approach to a guttural semi-vowel. If a Saxon pronounces the same word, he changes the *d* into *t*, and the guttural semi-vowel into the guttural flatus asper, like *ck* in 'loch.' In other parts of Germany, the final guttural is sounded as a media or as tenuis, while in the English 'day' the guttural semi-vowel has become evanescent. The same applies to French "sou" instead of "sol," and "vaut" instead of "valet." In Sanskrit no semi-vowel is tolerated at the end of words or before a tenuis.

Professor Wheatstone's researches prove that a distinguishing mark of the semi-vowels consists in their having no corresponding mutes. This applies not only to y, r, l, but also to w and 'h. It should be remarked, however, that, in the guttural and palatal series, the semi-vowel and flatus lenis can hardly be distinguished except in theory.

Formation of Sibilants (flatus).

If there is no contact at all, and the breath passes between the two organs without being stopped, still not without giving rise to a certain friction on passing that point of contact where guttural, dental, and labial consonants are formed, we get the three sibilants, or the "winds," as they are more properly called by Hindu grammarians. These are, the pure breathing, without even a guttural modification, commonly called spiritus asper and lenis; the thick guttural flatus, as heard in "loch;" the sharp and soft s for the dentals; and the sharp and soft f for the labials. The sibilants or flatus are distinguished from all other consonants by this, that with them a breathing is really emitted, while the consonants are only so many stops which preclude the emission of vocal sound. A candle applied to the mouth will at once show the difference between the labial flatus asper, as in "find," and the consonantal stops, such as p, b, or even the labial semi-vowel, as heard in "wind." In this respect

the sibilant flatus approaches nearer to the vowels than even the semi-vowels.

As we distinguished between tenuis and media in the consonants, we must admit a twofold intonation for the flatus or the sibilants also. A flatus or sibilant cannot be modified exactly in the same manner as a consonant produced by contact; but, by an analogous process, it may become either "asper" or "lenis," rough or soft. We are best acquainted with this distinction in the primitive and unmodified breathing which necessarily precedes an initial vowel. The spiritus asper and lenis in Greek are modifications of that initial breathing which is inherent in every vowel sound at the beginning of a word or of a syllable. It comes out freely as the spiritus asper in Homer and ἄρος, frontier, while it is tempered and to our ears hardly audible in Aristotle and ὄρος, hill. In ancient languages the spiritus asper is frequently represented by the dental flatus (s), and the spiritus lenis by a semi-vowel, as, for instance, the Digamma Æolicum.

The dental flatus, as a tenuis or rather as flatus asper, is heard in sin and seal; while the media or lenis is frequently represented by the English z, as in zeal and breeze.

The sharp labial flatus is the pure f, which the Greeks could not pronounce, and which we hear in "find" and "life." The flat corresponding sound is heard in "vine" and "live." This also is a difficult letter to pronounce, and is therefore avoided by many people, or changed into b, as Scaliger said,

"Haud temere antiquas mutat Vasconia voces,
Cui nihil est aliud vivere quàm bibere."

Strictly speaking, and in accordance with our own definitions, every consonant at the end of a word, unless followed by a slight vocal exhalation such as is heard in drug, loud, sob, must become a tenuis. Now, if we take words where the final consonant is a flatus, but where, by the addition of a derivative syllable, the flatus ceases to be really final, we shall see distinctly how the flatus asper and lenis interchange. The sharp dental flatus is heard in "grass" and "grease." Here the s is really final, although an e is put at the end of grease. If we form the two verbs, to graze and to grease, we have

the corresponding flat s, the common German s. Exactly the same grammatical process applied to the labial flatus changes "life" into "live," *i. e.* the sharp labial flatus into the flat.

Some languages, as, for instance, Sanskrit, acknowledge none hut sharp sibilants; and a media followed by a flatus is changed in Sanskrit into a tenuis.

Formation of Nasals.

If, in the three organs, a full contact takes place and the vocal breathing is stopped, not abruptly, but in the same manner as with the sonant letters, and if afterwards the vocal breathing be emitted, not through the mouth, but through the nose, we get the three full nasal consonants n, n̄, and m, for the guttural, dental, and labial series. A speaking-machine leaves no doubt as to the manner in which a tenuis may be changed into a narisonant letter. "M," as Professor Wheatstone says, "was heard on opening two small tubes representing the nostrils, placed between the wind-chest and the mouth, while the front of the mouth was stopped as for p."

In most cases the peculiar character of the nasal is determined by the consonant immediately following. In "ink," the n is necessarily guttural; and if we try to pronounce it as a dental or labial, we have to stop after the n, and the transition to the guttural k becomes so awkward that, even in words like to "in-cur," most people pronounce the n like a guttural. No language, as far as I know, is fond of such incongruities as a guttural n. followed by any but guttural consonants, and they generally sacrifice etymology to euphony. In English we cannot pronounce em-ty, and therefore we pronounce and write emp-ty. In the Uraon-Kol language, which is a Tamulian dialect, "enan" is *I*, and the possessive prefix is "in," *my*. But in the Journal of the Asiatic Society of Bengal we find "im-bas," *my father*; but "ing-kos," *my child*. Cicero alludes to the same where he speaks of the n adulterinum. He says, that "cum nobis" was pronounced like "cun nobis."

At the end of words and syllables, however, the three nasal sounds, guttural, dental, or labial, may occur independently; and as it is necessary to distinguish a final m from a final n (*ἀγαθόν, bonum*), it will be advisable also to do the same for a final guttural nasal, as the French

“bon,” “Lundi,” or the English “to sing.” It is true that in most languages the final guttural nasal becomes really a double consonant, *i.e.* n + g, as in “sing,” or n + k, as in “sink;” still, as the pronunciation on this point varies even in different parts of England, it will be necessary to provide a distinct category, and afterwards a distinct sign, for the guttural nasal.

In some languages we meet even with an initial guttural nasal, as in Tibetan “nga-rang,” *I myself*. Whether here the initial sound is really so evanescent as to require a different sign from that which we have as the final letter in “rang,” is a question which a native alone could answer. Certain it is that in the Tibetan alphabet itself both are written by the same sign, while Csoma de Kőrös writes the initial guttural n by ñ, the final by ng; as “ña-rang.”

We have now, on physiological grounds, established the following system of consonants :

Tenues.	Mediæ.	Semi-vocales.	Flatus asperes.	sibilantes : lenes.	Nasales.
Gutturales : k (cap)	g (go)	'h (dag)	'h (loch)	'h (tag)	n. (sing).
Dentales : t (town)	d (do)	l (low)	s (seal)	z (zeal)	n (sin).
Labiales : p (pint)	b (bring)	w (win)	f (life)	v (live)	m (sum).
Spiritus asper :	' or	h (hear).			
Spiritus lenis :	'	(ear).			

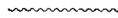
Formation of Aspirates.

According to Sanskrit grammarians, if we begin to pronounce the tenuis, but, in place of stopping it abruptly, allow it to come out with what they call the corresponding “wind” (flatus, wrongly called sibilans), we produce the *aspirata*, as a modified tenuis, not as a double consonant. This is admissible for the tenuis aspirata, but not for the mediæ aspirata. Other grammarians, therefore, maintain that all mediæ aspiratæ are formed by pronouncing the mediæ with a final 'h, the flatus lenis being considered identical with the spiritus; and they insist on this principally because the aspirated sonants could not be said to merge into, or terminate by, a surd sibilant. Accepting this view of the formation of these aspirates, to which we have no corresponding sounds in English, we may now represent the

complete table of the chief consonantal sounds possible in any dialect, as follows:—

	Tenuis.	Tenuis aspir.	Media.	Media aspir.	Semi-vocales.	Flatus sibilantes.	Nasales.
Guttural:	k	kḥ	g	gḥ	'h	'ḥ 'ḥ	n.
Dental:	t	tḥ	d	dḥ	l	s z	n
Labial:	p	pḥ	b	bḥ	w	f v	m

It should be remarked that in the course of time the fine distinctions between *kh*, *gh*, and *'h*, between *pḥ*, *bḥ*, and *f*, become generally merged into one common sound. In Sanskrit only, and in some of the southern languages of India, through the influence of Sanskrit, the distinction has been maintained. Instead of Sanskrit *tḥ* we find in Latin the simple *t*; instead of *dḥ*, the simple *d*, or, as a nearer approach, the *f* (*dḥuma* = *fumus*, &c.). The etymological distinction maintained in Sanskrit between “*dha*,” *to put, to create*, and “*da*,” *to give*, is lost in Persian, because there the two initial sounds *d* and *dḥ* have become one, and the root “*da*” has taken to itself the meaning both of creating and giving. Whatever objections, therefore, might be raised against the anticipated representation of the tenuis and media aspirata by means of an additional *ḥ* or *h*, they would practically apply only to a very limited sphere of languages. In Sanskrit no scholar could ever take *kh* for *k+h*, because the latter combination of sounds is grammatically impossible. In the Tamulian languages the fine distinctions introduced into their orthography have hardly found their way into the spoken dialects of the people at large.



Modifications of Gutturals and Dentals.

From what has been said before on the formation of the guttural and dental sounds, it must be clear that the exact place of contact by which they are produced can never be fixed with geometrical precision, and that by shifting this point forward or backward certain modifications will arise in the pronunciation of individuals, tribes, or nations. The point of contact between the lips is not liable to the

same changes, and the labials are, therefore, the most constant sounds in all dialects.

A. Dialectic Modifications of Gutturals and Dentals.

Where this variety of pronunciation is only in degree, without affecting the nature and real character of a guttural or dental consonant, we need not take any notice of it. Gutturals from a Semitic throat have a deeper sound than our own, and some grammarians have made a new class for them by calling them pectoral letters. The guttural flatus asper, as heard in the Swiss "ach" is deeper, and as it were more pectoral, than the usual German ch: but this is owing to a peculiarity of the organs of speech; and whatever letter might be chosen to represent this Swiss ch in a phonetic alphabet, it is certain none but a Swiss could ever pronounce it. Sanskrit grammarians sometimes regard h as formed in the chest (urasya), while they distinguish the other gutturals by the name of tongue-root letters (*gihvamuliya*). These refinements, however, are of no practical use; because, in dialects where the guttural sound is affected and diverted from its purer intonation, we generally find that the pure sound is lost altogether; so that the two hardly ever co-exist in the same language.

B. Specific Modifications of Gutturals and Dentals.

1. Palatals as Modifications of Gutturals.

But the place of contact of the gutturals may be pushed forward so far as to lie no longer in the throat, but in the palate. This change has taken place in almost all languages. Latin "cantus" is still "canto" in Italian, but in English "chant." In the same manner, the guttural tenuis in the Latin "vocs" (*vox*) has been softened in Sanskrit into the sound of the English ch, at least where it is followed by certain letters. Thus we have:

"vachmi," *I speak,*
but "vakshi," *thou speakest,*
"vakti," *he speaks.*

The same applies to the media. Latin "largus" is Italian "largo,"

but English "large." The Latin guttural media g in "jungo" is softened in Sanskrit into the sound of the English j. We have Sanskrit "yuga," Latin "jugum;" but in the verb we have:

yunaj + mi, *I join.*
 yunak + shi, *thou joinest.*
 yunak + ti, *he joins.*

The identity of many words in Latin and Sanskrit becomes palpable at once, if, instead of writing this modified guttural, or, as we may now call it, *palatal* sound, by a new type, we write it by a modified *h*. Sansk. "chatvar," or as some write "tschatwar," does not look like "quatuor;" but Lithuanian "keturi" and Sanskrit "katvar" speak for themselves. Sanskrit "cha" or "tscha" does not look like Latin "que;" but Greek "κε" and Sanskrit "ka" assert their relationship without disguise. Although, therefore, we are forced to admit the palatals, as a separate class, side by side with the gutturals, because most languages retain both sets and use them for distinct etymological and grammatical purposes, still it will be well to remember that the palatals are more nearly related to the gutturals than to any other class, and that in most languages the two are still interchangeable.

That the pronunciation of the palatals may vary again, like that of the gutturals, requires no explanation. Some people imagine they perceive a difference between the English palatal in "church," and the Italian palatal in "cielo," and they maintain that no Englishman can properly pronounce the Italian palatal. If so, it only proves what was said before, that slight modifications like these do never co-exist in the same language; that English has but one, and Italian but one palatal, though the two may slightly differ. But even if we invented a special letter to represent the Italian palatal, no one except an Italian would be able to pronounce it, not even for his life, as the French failed in "ceci" and "ciceri" at the time of the Sicilian Vespers. All consonants, therefore, which are no longer gutturals, and not yet dentals, should be called palatals. That palatals have again a tendency to become dentals, may be seen from words like "τέσσαρες" instead of "katvaras" or "keturi."

Frequently the pronunciation of the palatals becomes so broad that they seem, and in some cases really are, double consonants. Some people pronounce "church" (kirk) as if it were written "tchurch." If this pronunciation becomes sanctioned, and we have to deal with a language which has as yet no historical orthography, it must be left to the ear of the missionary to determine whether he hears distinctly two consonants, or one only though pronounced rather fully and broadly. If he hears distinctly the two sounds $t + ch$, or $t + sh$, he should write both, particularly if in the same language there exists another series of letters with the simple palatal sound. This is the case, for instance, in Tibetan and its numerous dialects. If, therefore, the missionary has to deal with a Bhotiya dialect, which has not yet been fixed by the Tibetan alphabet, the simple palatals should be kept distinct from the compound palatals, tsh , dsh , &c. In the literary language of Tibet, where the Sanskrit alphabet has been adopted, an artificial distinction has been introduced, and the compound sounds, usually transcribed as tsh , $tshh$, and dsh , are distinguished by a diacritical mark at the top from the simple palatals, the sound of which is described as like the English ch in *church*, and j in *join*. How this artificial distinction should be rendered in transliteration, will have to be considered under III. *b*. If we have once the palatal tenuis, the same modifications as those described above give us the palatal media, the two aspiratæ, the nasal, the semi-vowel, and the sibilant.

The sound of the tenuis is given in the English "church;" of the media, in "to join." The semi-vowel we have in the pronunciation of "yea." The nasal again hardly exists by itself, but only if followed by palatals. We have it in "inch" and "injure." Where the Spaniards use an \tilde{n} , they write a double by a simple sound; for the sound is the nasal followed by the corresponding semi-vowel, ny . The French express the same sound in a different manner. The French "besogne," if it occurred in an African language, would have to be expressed by the missionary as "bezonye."

As to the palatal flatus or sibilant, we must distinguish again between its sharp and flat sound. The sharp sound is heard in "sharp," or French "chose." The flat sound is less known in English, but of frequent occurrence in French; such as "je," and "joli," very

different from the English "jolly." It is a sound of frequent occurrence in African languages.* The difference between the hard and soft palatal flatus may best be illustrated by a reference to the modern languages of Europe. A guttural tenuis in Latin becomes a palatal tenuis in English, and a palatal sibilant in French; *cantus*, the chant, *le chant*. Here the initial sibilant in French is a tenuis or asper like the English *sh* in "she." A guttural media in Latin becomes a palatal media in English, and a palatal sibilant in French; *elegia*, the elegy, *l'élégie*. Here the sibilant sound of the French *g* is the same as in "genou" or "je;" it is the soft palatal sibilant, sometimes expressed in English by *s*, as in *erasure* and *pleasure*.

It should be remarked, however, that the proper, and not yet assibilated sound of the palatal flatus asper is not the French *ch* as heard in "Chine," but rather the German *ch* in "China," "mädchen," "ich," "könig." Both sounds are palatal according to our definition of this term; but the German might be called the simple, the French the assibilated palatal flatus. Ellis calls the former the "whispered guttural sibilant," and remarks that it is generally preceded by a vowel of the *i* class. The corresponding "spoken consonant" or the flatus lenis, was discovered by Ellis in such words as "kön'ge."

2. *Linguals as Modifications of Dentals.*

While the pure dental is produced by bringing the tip of the tongue straight against the teeth, a peculiarly modified and rather obtuse consonantal sound is formed if the tongue is curled back till its tip is at the root, and the dome of the mouth then struck with its back or under-surface. The consonants produced by this peculiar process differ from the dentals, both by their place and by their instrument, and it has been common in languages where these peculiar consonants occur to call them "linguals." Although this name is not quite distinct, the tongue being the agent in the palatals and dentals as well as in these linguals, still it is preferable to another name which has also been applied to them, *Cerebrals*—*a*

* See the Rev. Dr. Krapf's "Outline of the Elements of the Kisúáheli Language;" Tübingen, 1850, page 23.

mere mistranslation of the Sanskrit name "Murddhanya."* These linguals vary again in the degree of obtuseness imparted to them in different dialects, and which evades graphical representation. All letters that cease to be pure dentals by shifting the point of contact backward from the teeth, must be considered as linguals; and many languages, Semitic as well as Arian, use them for distinct etymological purposes. As with the palatals, we have with the linguals also a complete set of modified consonants. The lingual tenuis, tenuis aspirata, media, media aspirata, and nasal have no corresponding sounds in English, because, as we shall see, the English organ has modified the dental sounds by a forward and not by a backward movement. The semi-vowel is the lingual r, produced by a vibration of the curled tongue in which the Italians and Scotch excel, and which we find it difficult to imitate. The English and the German r become mostly guttural, while, on the contrary, the Semitic guttural semi-vowel, 'hain, takes frequently the sound of a guttural r. It might be advisable to distinguish between a guttural and a lingual r; but most organs can only pronounce either the one or the other, and the two therefore seldom co-exist in the same dialect.

The lingual sibilant is a sound peculiar to the Sanskrit; and as, particularly in modern Indian dialects, it interchanges with the guttural tenuis aspirata, its pronunciation must have partaken of a certain guttural flatus.

There is a peculiarity in the pronunciation of the dental tenuis aspirata and media aspirata, which, though it exists but in few languages, deserves to be noticed here. In most of the spoken idioms of Europe, although a distinction is made in writing, there is hardly any

* "Murddhanya," being derived from "murddhan," *head* or *top*, was a technical name given to these letters, because their place was the top or highest point in the dome of the palate, the *otparos* of the Greeks. The proper translation would have been "Cacuminals." "Cerebrals" is wrong in every respect; for no letter is pronounced by means of the brain, nor does "murddhan" mean brain. It is not advisable to retain this name, even as a technical term, after it has been proved to owe its origin to a mere mistranslation. It is a word which has given rise to confused ideas on the nature of the lingual letters, and which ought therefore to be discarded from philological treatises, though the mistranslation and its cause have hitherto failed to attract the observation of either Sanskrit or comparative grammarians.

difference in the pronunciation of *t* and *th*, or *d* and *dh*. The German "thun," *to do*, the French "théologie," are pronounced as if they were written "tun," "téologie." In the Low German and Scandinavian dialects, however, the aspiration of the *t* and *d* (according to Grimm's law, an organic aspiration) has been preserved to a certain extent, only the consonantal contact by which they are produced takes place no longer between the tongue and the inside of the teeth, but is pushed forward so as to lie really between the tongue and the edge of the teeth. This position of the organs produces the two well-known continuous sounds of *th*, in "think" and "though." There is a distinct Runic letter to express them, þ; and in later MSS. a graphical distinction is introduced between þ and ð, tenuis and media. The difference between the tenuis and media is brought out most distinctly by the same experiment which was tried for *f* and *v*. (page 7.). We have the tenuis in "breath," but it is changed into media in "to breathe."

We may consider these two sounds as dialectical varieties of the real *th* and *dh*, which existed in Sanskrit, but which, like most aspirated sonant and surd consonants, have since become extinct. To many people the pronunciation of the English *th* is an impossibility; and in no dialect, except perhaps the Irish, does the English pronunciation of the *th* coexist with the pure and simple pronunciation of *th* and *dh*. Still, as their sound is very characteristic, it might be desirable to mark it also in writing, so that even those who do not know the peculiar accent and pronunciation of a language, should be able to distinguish by the eye the English sound of the *th* from the usual *th* and *dh*.

The principal consonantal sounds, without any regard as yet to their graphic representation, may now be classified and defined as follows. Where possible, the approximate sound is indicated by English words.

	<i>a.</i> Tenuis.	<i>b.</i> Tenuis aspirata	<i>c.</i> Media.	<i>d.</i> Media aspirata.	<i>e.</i> Nasalis.	<i>f.</i> Semivocalis.	<i>g.</i> Fistus (sibilans).
1. Gutturals -	kite		gate	-	sing	dag (<i>Dutch</i>)	loch, tag
2. Palatals -	church	-	join	-	<i>Fr.</i> signe	yet	sharp, <i>Fr. je.</i>
3. Dentals -	tan	(breath)	dock	(breath)	not	let	grass, graze.
4. Linguals -	-	-	-	-	-	run	-
5. Labials -	pau	-	bed	-	inan	will	lite, live.

VOWELS.

The Physiological Scale of Vowels.

If we recall the process by which the semi-vowels were formed in the three principal classes, and if, instead of stopping the vocal sound by means of that slight remnant of consonantal contact or convergence, which characterized the formation of the semi-vowels, we allow the full volume of breath to pass over the point of contact and there to vibrate and sound, we get three pure vowel sounds, guttural, palatal, and dental, which can best be expressed by the Italian *A, I, U*, as heard in psalm, ravine, flute.

Formation of the Labial Vowel.

Let us pronounce the labial semi-vowel, the English *w* in *woe*, and, instead of stopping the vocal sound as it approaches the labial point of contact, emit it freely through the rounded aperture of the lips, and we have the vowel *u*. Here also the experiment of the candle will elucidate the process that takes place, but of which we are hardly conscious. The mere semi-vowel *w*, not followed by any vowel, should not produce any disturbance in the flame; at least not more than might be occasioned by the motion of the lips, which is the same for all consonants. The labial flatus, *f*, on the contrary, will disturb the flame considerably, and the vowel *u* may extinguish it.

Formation of the Palatal Vowel.

The same process which changes *w* into *u*, changes the guttural semi-vowel *h* into *a*, and the palatal semi-vowel *y* into *i*. Let us pronounce the *y* in *yea* without any vowel after it, and it only requires the removal of that stoppage of sound which takes place between tongue and palate, in order to allow the vowel *i*, as in *ravine*, to be heard distinctly.

Formation of the Guttural Vowel.

Let us pronounce the guttural semi-vowel as heard in the Dutch dag or the Hebrew 'hain, and, if we try to change this semi-vowel gradually into the vowel a, we feel that what we effect is merely the removal of that stoppage which in the formation of the semi-vowel takes place at the very point of guttural contact.

The vowels, as was said before, are formed by the voice modified, but not interrupted, by the various positions of the tongue and the lips. "Their differences depend," as Professor Wheatstone adds, "on the proportions between the aperture of the lips and the internal cavity of the mouth, which is altered by the different elevations of the tongue."

Succession of Vowels, natural and artificial.

The organic succession of vowel sounds is the same as for consonants,—guttural, palatal, labial, a, i, u. The succession of vowel sounds produced by the gradual lengthening of a cylindrical tube joined to a reed organ-pipe, as described by Professor Willis*, is an interesting experiment as to the scale of vowels in the abstract. It gives, or, at least, is reported to give,

i,	e,	a,	aw,	o,	u.
beat,	bait,	bath,	bought,	boat,	boot.

But as these pipes are round and regular, while the construction of the pipe formed by larynx, throat, palate, jaws, and lips is not, the succession of vowels given by these pipes cannot be expected to correspond with the local succession of vowels as formed by the organs of speech.

Kempelen states that if we pay attention to the successive contraction of the throat only, we shall find, indeed, that the aperture of the throat is smallest if we pronounce the Italian i, and that it gets gradually larger as we pronounce e, a, o, u; while if we pay attention to the successive contraction of the lips, which is quite as essential

* Transactions of the Cambridge Philosophical Society, vol. iii. paper 10. 1828-29.

to the formation of the vowels as the contraction of the throat, the scale of vowels is a different one. Here the aperture of the lips is largest if we pronounce the a; and it gradually decreases as we go on to the e, i, o, and u.

Hence, if we represent the opening of the lips by Roman, and the opening of the throat by English figures, taking the smallest aperture as our unit, we may, according to Kempelen, represent the five vowels in a mathematical progression:

i = III. 1. e = IV. 2. a = V. 3. o = II. 4. u = I. 5.

It has been remarked by Professor Purkinje, that the conditions for the formation of some of the vowels, particularly of a and e, as heard in far and name, have not been quite correctly stated by Kempelen. The production of both these sounds depends principally on the form of the cavity of the throat between the root of the tongue and the larynx; in both cases this space is large, but largest in the pronunciation of e. The size of the opening of the mouth is the same in the two cases; not different, as Kempelen states. The position which he ascribes to the lips in pronouncing o is also unnecessary.*

The experiments of Professor Willis show that, if we look on the instrument by which the vowels are formed as a vibrating membranous tongue, with one tube prefixed, and another added below the tongue, the shortest length of the tube gives i; the longest, u; and an intermediate one, a. But as the human organ of speech is not a regular tube, we must insist on this, that in the mouth the shortest length is indicated by the point of palatal contact, the longest by the point of labial, and the intermediate by the point of guttural contact; and that here, by the simultaneous operation of the guttural and labial aperture, the vowels i, u, and a are formed.

The Lingual and Dental Vowels.

Besides the three vowels struck at the guttural, palatal, and labial points of contact, the Sanskrit, in strict analogy, forms two peculiar vowels as modifications of the lingual and dental semi-vowels. *R* and *L*, subjected to the same process which changes 'h into a, y into

* See J. Müller, *Elements of Physiology*, p. 1047.

i, and w into u, become ri, li, or řě and lě. At least these sounds ri and li, approach as near to the original value of the Indian vowels as with our alphabet we can express it. According to their origin, they may be described as r and l opened and vocalised.

Unmodified Vowels.

If we attempt in singing to pronounce no particular vowel, we still hear the vowel-sound of the Italian a. This vowel expresses the quality of the musical vibrations emitted from the human larynx and naturally modified by a reverberation of the palate. But if we arrest the vibrations before they pass the guttural point of contact — if, either in a whispered or a vocalised shape, we emit the voice without allowing it to strike against any part of the mouth — we hear the unmodified and primitive sound as in but, bird, lull. It is the sound which, in Professor Willis's experiments, "seems to be the natural vowel of the reed," or, according to Mr. Ellis, "the voice in its least modified form." We hear it also if we take the larynx of a dead body, and blow through it while compressing the chordæ vocales.

In these experiments it is impossible to distinguish more than *one* sound; and most people admit but *one* unmodified vowel in English. According to Sir John Herschell, there is no difference in the vowels of the words spurt, assert, dirt, virtue, dove, double, blood. Mr. Ellis considers the u in cur as the corresponding long vowel. Other writers, however, as Sheridan and Smart, distinguish between the sounds of bird and work, of whirl'd and world; and in some languages this difference requires to be expressed. It is a very delicate difference, but may be accounted for by a slight palatal and labial pressure, by which this obscure sound is affected after having escaped the guttural reverberation.

In English almost every vowel is liable to be absorbed by this obscure sound; as beggar, offer, bird, work, but. It is sometimes pronounced between two consonants, though not expressed in writing; as el-m, mar-sh, schis-m, rhyth-m. Here it is the breath inherent in continuous consonants. In French it is the e muet, as in entendre, Londres. In German it is doubtful whether the same sound exists at all, though I think it may be heard occasionally in such words as leber, leben.

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All vowels may be short or long, with the exception of the unmodified breathing (Rapp's "Urlaut"), which is always short.

The sound of the long a we have in psalm, messa (*It.*); short, in Sam.

„	„	i	„	neat, Italia;	„	knit.
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DIPHTHONGS.

From the organic local succession of the three simple vowels a, i, u, it follows that real compound vowels can only be formed with a, as the first and most independent vowel, for their basis. The a, on its onward passage from the throat to the aperture of the mouth, may be followed or modified by i or u. It may embrace the palatal and labial vowels, and carry them along with it without having to retrace its steps, or occasioning any stoppage, which of course would at once change the vowel into the semi-vowel. In Sanskrit. therefore, the palatal and labial vowels, if brought in immediate contact with a following a, relapse naturally into their corresponding semi-vowels, y and w, and never form the base of diphthongs. The vowels i + a, or u + a, if pronounced in quick succession, become ya and wa, but they will never coalesce into one vocal sound, because the intonation of the a lies behind that of i; the vocal flatus has to be inverted, and this inversion amounts in fact to a consonantal stoppage sufficient to change the vowels i and u into the semi-vowels y and w.

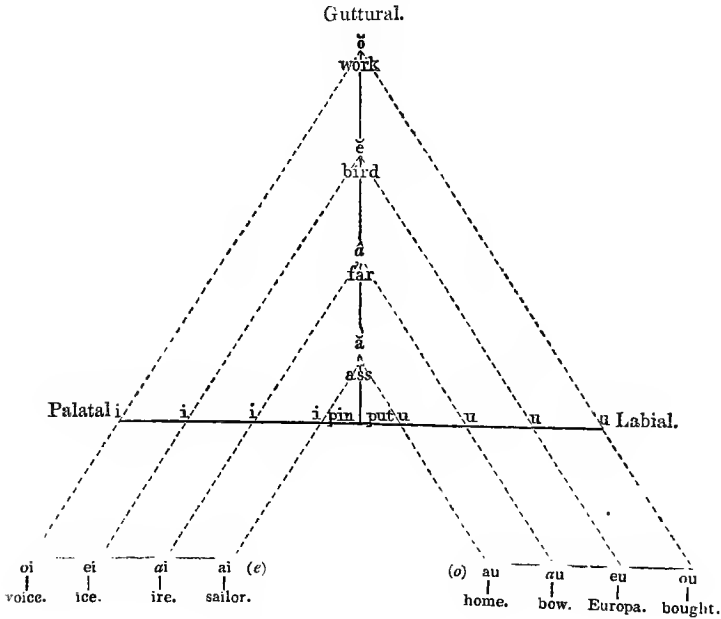
The four Bases of Diphthongs.

According to our definition of diphthongs, their basis can only be guttural; but as the guttural a may be short or long, and as the two unmodified vowels (ě, ř) lie even behind the guttural point of contact, we get really a four-fold basis for diphthong sounds. Each

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of the four vowels (ǎ, â, ě, ǒ) being liable to a palatal or labial modification, we may on physiological grounds expect eight different compound vowels.

This can best be represented by a diagram :



Diphthongs with ǎ as base.

If the short a is quickly followed by i and u, so that, as the Hindus say, the guttural is mixed with the palatal and labial vowels like milk and water, we get the diphthongs ai and au, pronounced as in French. They correspond in sound to the Italian e and o, and to the English sounds in sailor and home.

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If the a, as the first element, retains more of its independent nature, or is long, then ā + i pronounced together give the German diphthong ai, as in pic and buy; a + u give the German diphthong au, as in proud.

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If, instead of the short or long a, the base of the diphthong becomes ě, we get the combinations ei and eu, both of rare occurrence except in German, where the sound of ei (English islc), is thinner than that of ai (English ire). In eu, the two vowels are still heard very distinctly in the Italian Europa. In German they coalesce more, and almost take the sound of oy in boy.

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In the diphthong oi also, the pronunciation may vary according to the degree of speed with which the i follows the ō. O and u, on the contrary, coalesce easily, and form the well-known deep sound of ou in bought, or of a in fall.

Different Kinds of Diphthongs.

Although the sounds of the Italian e and o are here classed together, as diphthongs, with the English sounds of i and ou, this is not meant to deny a difference in degree between the two. The former might be called monophthongs, because the ear receives but one impression, as when two notes are struck simultaneously. It is only by theoretical analysis that we can detect the two component parts of e and o — a fact well known to every Sanskrit scholar. The âi and âu, on the contrary, are real diphthongs; and an attentive ear will perceive ah + ee in the English "I," ah + oo in the English "out." Sir John Herschell compares these sounds to quick arpeggios, where two chords are struck almost, but not quite simultaneously.

In African dialects, as, for instance, in Zulu, some Missionaries say that two vowels combine for the formation of one sound, as in hai (no), Umcopai (a proper name); others, that there are no diphthongs, but that, whenever two vowels meet, the separate power of each is distinctly marked and preserved in pronunciation.* This may depend on a peculiar disposition in the organ of hearing as well as in the organ of speech.

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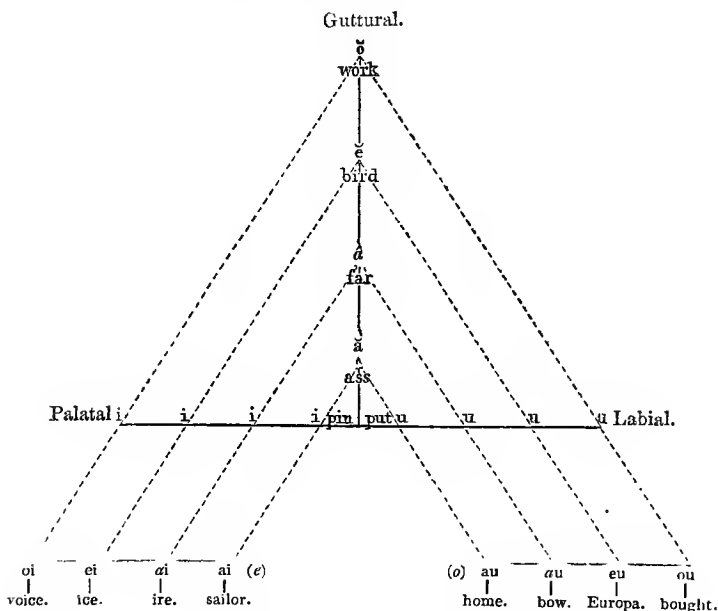
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diphthong sound which stands to au (proud) in the same relation as oi (voice) to ai (vice). I imagine to hear it in the English broad, which has the same vowel as all, bawl, Paul, nor, war; and we certainly have it in the Swedish â. The labial element, no doubt, is very slight; still, let any body pronounce â and ou (far and bought), and a looking-glass will tell him that he adds a distinct labial pressure in order to change the â into ou.

Vowels broken by E or I.

In some languages we find that certain vowels are modified by an inherent ě, or, as some say, by i. The vowels most liable to this modification are a, o, u.

The a, with an inherent e, becomes German ä, as in väter, very nearly the same sound as in the English substantive bear. O, by the same influence, takes the German sound of ö in König, or that of the French eu in peu. U, in German, becomes ü, the French u in jurer.

To many organs these sounds are so troublesome that they are sometimes avoided altogether, as in English. Their pronunciation varies in different dialects; and the German ä sounds in some places like e, the French ü like u.

If we remember how the simple vowel sounds were represented by Kempelen in a mathematical progression according to the amount of aperture of the throat and lips required for their formation, we shall see that what takes place, if an a is changed to ae, an o to oe, and an u to ue, is in each case a diminution of the guttural aperture. While the pure a is formed by 5 degrees of labial and 3 degrees of guttural aperture, the ae is produced by 5 degrees of labial, but only 1 degree of guttural aperture. Thus, in the pronunciation of oe, the labial aperture remains at 2 degrees, and in the pronunciation of ue at 1 degree; but in either case the guttural aperture is respectively reduced from 4 degrees and 5 degrees to 1 degree. We may, therefore, represent the broken vowels (Grimm's Umlaut) in the following manner:—

$$ae = V. 1; \quad oe = II. 1; \quad ue = I. 1.$$

There is one class of languages, the Tataric, where these broken sounds are of frequent occurrence, and of great importance. The "harmony of vowels" which pervades these dialects would be lost

altogether (as it is, to a great extent, if Tataric languages are written with Arabic letters), unless to these vowels a distinct category were assigned. Besides the broken or softened a, o, and u, the Tataric languages have a fourth vowel, a softening of the i, which we hear in "will." Thus we have, in Yakute :

Hard vowels a, o, i, u. Heavy vowels a, ä, o, ö,
Soft vowels ä, ö, ĩ, ü. Light vowels i, ĩ, u, ü.

All the vowels in a Yakute word depend on the first. If the first is hard, all following vowels must be hard ; if soft, all become soft. Again, if the vowel of one syllable is heavy, that of the next can only be the same heavy vowel, or its corresponding light vowel. If it is light, that of the next syllable must be the same light vowel, or its corresponding heavy vowel. For instance, if the first syllable of a word has a, the next can only have a or i ; if ä. ä or ĩ ; if o, o or u ; if ö, ö or ü.

The vowels would, therefore, come under the following physiological categories : —

Guttural	a,	short, as in	<i>Sam</i> ;	long, as in	<i>psalm</i> .
"	ö	} o.	"	"	<i>work</i> }
"	ě		"	"	<i>bird</i> }
Palatal	i	"	"	<i>knit</i> ;	" <i>neat</i> .
Labial	u	"	"	<i>full</i> ;	" <i>fool</i> .
Gutturo-palatal	ai (e)	"	"	<i>debt</i> ;	" <i>date</i> .
"	ai	"	"	"	" <i>ire</i> .
"	ei	"	"	"	" <i>ice</i> .
"	oi	"	"	"	" <i>voice</i> .
Gutturo-labial	au (o)	"	"	<i>not</i> ;	" <i>note</i> .
"	au	"	"	"	" <i>proud</i> .
"	eu	"	"	"	Ital. <i>Europa</i> .
"	ou	"	"	"	" <i>bought</i> .
Lingual	rě	"	"	<i>fiery</i> ;	" <i>reach</i> .
Dental	lě	"	"	<i>friendly</i> ;	" <i>leach</i> .
	A broken, as in	<i>Väter</i> .	I broken, as in	<i>Diener</i> .	
	O	" <i>König</i> .	U	" <i>Güte</i> .	

It has frequently been remarked that the short vowels in English (hat, bed, pit, pot, full) differ from their corresponding long vowels,

not merely in quantity, but in quality also. As they mostly occur in unaccented syllables, they have lost that vocal timbre which the short vowels in German and Italian have preserved. Still it is not necessary to invent new signs for these surd vowels, because in origin they correspond exactly to the short vowels in other languages, only that they are uniformly modified by a peculiarity of pronunciation inherent in the English tongue. The English language has lost the pure short vowels altogether; and it is not by the eye, but by the ear only, that foreigners can learn the peculiar pronunciation of the short vowels in English.

II.

How can these principal Sounds, after proper Classification, be expressed by us in writing and printing, so as to preserve their physiological Value, without creating new typographical Difficulties?

The results at which we have arrived in the first part of our inquiry are those on which, with very slight and unimportant exceptions, all may be said to agree, who, whether in India or Europe, have attempted to analyse scientifically the elements of human speech. There are, no doubt, some refinements, and some more accurate subdivisions, as will be seen in the extracts given from the *Pratisakhyas*, which it will be necessary to attend to in exceptional cases, and particularly in philological researches. But, as far as the general physiological outlines of our phonetic system are concerned, we hardly expect any serious difference of opinion.

Widely different opinions, however, start up as soon as we approach the second question, how these sounds are to be expressed in writing. Omitting the different propositions to adopt an Oriental alphabet, such as Sanskrit or Arabic, or the Greek alphabet, or newly invented letters, whether short-hand or otherwise, we shall take it for granted that the Latin alphabet, which, though of Semitic origin, has so long been the armour of thought in the struggles and conquests of civilisation, has really the greatest and most natural claims on our consideration.

There are two principles regulating the application of the Latin

alphabet to our physiological sounds on which there has been a general agreement since the days of Halhed and Wilkins :

1. *That each sound shall have but one representative letter, and that therefore each letter shall always express the same sound.*

2. *That each simple sound shall be expressed by a single letter, and compound sounds by compound letters.*

If with these two principles we try to write the forty-four consonants of our physiological alphabet by means of the twenty-four consonants of the Latin, it follows that we must add to the latter diacritical signs, in order to make them answer our purpose.

Now, in the adoption of diacritical signs, another principle should be laid down :

“ That the same modification should always be expressed by the same diacritical mark.”

In a theoretical system we might even go a step beyond this, and lay it down as a principle that the same diacritical mark should always express one and the same modification. The advantages which would result from the adoption of such a principle are palpable ; but the variety of diacritical marks which it would entail upon us, and the number of new types which would have to be cast to carry it out consistently, must strongly militate against it, particularly in the construction of a Missionary alphabet. Here, as in all branches of Missionary labour, it must be our aim to obtain the greatest results by the smallest means.

Guttural, Palatal, and Dental Tenuis.

The guttural, dental, and labial tennes are naturally expressed by k, t, p.

Guttural, Palatal, and Dental Media.

The modification which changes these tennes into mediæ should consistently be expressed by a uniform diacritical sign attached to k, t, p. For more than one reason, however, we prefer the Latin letters, g, d, b.

It is understood that *g*, after once being chosen as the representative of the guttural media, like *g* in *gun*, whatever vowel may follow, can never be used promiscuously both for the guttural and the palatal media, as the English *g* in *gun* and *gin*.

How to express Aspirates ?

The aspirated tenues and mediæ in the guttural, dental, and palatal series, which, according to the description given above, are not compound, but simple though modified sounds, should be written by simple consonants with a diacritical mark of aspiration. This would give us:

k', t', p', g', d', b'.

These types have been cut many times since Count Volney founded his prize at the French Academy for transcribing Oriental alphabets, and even before his time. They exist at Berlin, Paris, Leipzig, Darmstadt, Petersburg, and several other places. They have been cut in different sizes and on different bodies. Still the difficulty of having them at hand when required, making them range properly, and keeping always a sufficient stock, has been so great even in places like London, Paris, and Berlin, that their adoption would defeat the very object of our alphabet, which is to be used in Greenland as well as in Borneo, and is to be handled by unexperienced printers even in the most distant stations, where nothing but an ordinary English font can be expected to exist. In our Missionary alphabet we must therefore have no dots, no hooks, no accents, no Greek letters, no new types, no diacritical *appendages* whatsoever. No doubt, Missionary Societies might have all these letters cut and cast on as many sizes and bodies as necessary. Punches or fonts might be sent to the principal Missionary stations. But how long would this last? If a few psalms or catechisms had to be printed at Bangkok, and if there were no hooked letters to represent the aspirated palatal sound by a single type (k'), is it likely that they would send to Calcutta or London for this type, which, after it arrived, might perhaps be found not to range with the rest? It is much more likely that, in the absence of the type prescribed by the Missionary Societies at home, each missionary would find himself thrown on his own resources, and different alphabets would again spring

up in different places. Besides, our alphabet is not only to be an alphabet of missionaries. In time it is to become the alphabet of those tribes and nations whose first acquaintance with writing will be through the Bible translated into their language and transcribed in a rational alphabet. Fifty or a hundred years hence, it may be the alphabet of all the civilised nations of Africa, Australia, and the greater part of Asia. Must all the printers of Australian advertisements, the editors of African newspapers, the publishers of Malay novels or Papua primers, write to Mr. Watts, Crown Court, Temple Bar, for new sorts of dotted and hooked letters? I do not say it is impossible; but many things are possible, and still not practical; and these new hooked and dotted types seem to me decidedly to belong to this class.

In questions of this kind, no harm is done if principles are sacrificed to expediency; and I therefore propose to write the aspirate letters, as all English and most French and German scholars have written them hitherto, by

kh, th, ph, gh, dh, bh.

What do we lose by this? The spiritus asper (´) is after all but a faintly disguised H, changed into **h** and **h**, for asper and lenis, and then abbreviated into ´ and ´. Besides, the languages where these simple aspirates occur are not many; and in India, where they are of most frequent use, the phonetic system is so carefully arranged that there no ambiguity can arise whether kh be meant for an aspirated guttural **h** or for **k** followed by the semi-vowel **h**. If the semi-vowel **h** comes in immediate contact with **k**, **k**+**h** is changed into **g**+**gh**, or a stop (virama) has to be put after the **k**. This might be done where, as in discussing grammatical niceties, it is desirable to distinguish between **kh** and **k-h**. The missionary, except in India, will hardly ever suffer from this ambiguity; and if the scholar should insist on its being removed, we shall see immediately how even the most delicate scruples on this point could be satisfied.

There is still, if we examine the alphabets hitherto proposed or adopted, a whole array of dots and hooks, which must be eliminated, or at least be reduced, as far as possible; and though we might, after gaining our point with regard to the **h**, get through gutturals, dentals, and labials, we still have new and more formidable enemies to encounter in the palatals and linguals.

How to express Palatals ?

Palatals are modifications of gutturals, and therefore the most natural course would be to express them by the guttural series, adding only a line or an accent or a dot, or any other uniform diacritical sign to indicate their modified value. So great, however, has been the disinclination to use diacritical signs, that in common usage, where the palatal tenuis had to be expressed, the most anomalous expedients have been resorted to in order to avoid hooks or dots. In English, to represent the Sanskrit palatal tenuis, *ch* has been used; and as the *h* seemed to be too much in the teeth of all analogy, the simple *c* even has been adopted, leaving *ch* for the aspirated palatal. On the same ground, the Germans write *tsch* for the palatal tenuis, and *tschh* for the aspirate. The French write *tch* and *tchh*. The Italians do not hesitate to use *ci* for the tenuis, though I do not see how they could express the corresponding aspirate. The Russians recommend their *ч*; and the Brahmans would probably recommend a Sanskrit type. Still all, even the German *tschh*, are meant to represent simple consonants, which, as in Sanskrit, would not make a preceding short vowel long. That in English the *ch*, in Italian *ci*, and in German *tsch*, have a sound very like the palatal tenuis, is of course a mere accident. In English the *ch* is not always sounded alike; and its pronunciation in the different dialects of Europe varies more than that of most letters. Besides, our alphabetic representative of the palatal sound is to be pronounced and comprehended, not by a few people in Germany or Italy, but by all the nations of Africa and Australia. Now to them the *ch* would prove deceptive; first, because we never use the simple *c* (by this we make up for the primary alphabetical divorce introduced by the libertus of Spurius Carvilius Ruga), and, secondly, because the *h* would seem to indicate the modification of the aspirate.

The natural way of writing the palatals, so as not to obscure their close relationship to the gutturals, would be, *ḳ*, *ḳh*, *g̣*, *g̣h*.

But here the same difficulty arises as before. If the dots or marks are printed separately, the lines where these dots occur become more distant than the rest. For one such dotted letter the compositor has to compose a whole line of blanks. These will shift, particularly when there are corrections, and the misprints are endless.

In Turnour's edition of the Mahavansa, which is printed with dotted letters, we get thirty-five pages quarto of errata to about a hundred pages of text. But they might be cast on one body. True, they might be — perhaps they will be. At all events they have been; and Volney offered such types to anybody that would ask for them. Still, when I inquire at a press like the University press of Oxford, they are not forthcoming. We must not expect that what is impossible in the nineteenth century at Oxford, will be possible in the twentieth century at Timbuktu.

Now the difficulty, so far as I can see, was solved by a compositor to whom I sent some MS., where each palatal letter was marked by a line under it. The compositor, not knowing what these lines meant, took them for the usual marks of italics, and I was surprised to see that this answered the purpose, saved much trouble and much expense, and, on the whole, did not look badly. As every English font includes italic letters, the usefulness of these modified types for our Missionary alphabet "springs to the eyes," as we say in German. They are sufficiently startling to remind the reader of their modified pronunciation, and at the same time they indicate, as in most cases they ought, their original guttural character to the reflecting philologist. As in ordinary books italics are used to attract attention, so also in our alphabet. Even to those who have never heard the names of guttural and palatal letters, they will show that the *h* is not the usual *k*. Persons in the slightest degree acquainted with phonetics will be made aware that the *h* is, in shape and sound, a modification of the *k*. All who admit that palatals are modifications of gutturals would see at once that the modification intended by *h* could only be the palatal. And as to the proper pronunciation of the *h*, as palatal tenuis, in different dialects, people who read their own language expressed in this alphabet will never hesitate over its pronunciation. Others *must* learn it, as they now learn the pronunciation of Italian *ci* and *chi*, or rest satisfied to know that *h* stands for the palatal tenuis, and for nothing else. Sooner or later this expedient is certain to be adopted. Thus we get, as the representatives of the palatals,

h, *h*h, *g*, *gh*.

Now, also, it will appear how we can avoid the ambiguity before

alluded to,—whether the *h* of aspirated consonants expresses their aspirated nature or an independent guttural semi-vowel or flatus. Let the *h*, where it is not meant as a letter, but as a diacritical sign, be printed as an italic *h*, and the last ground for complaint will vanish. Still this is only needful for philological objects; for practical purposes the common *h* may remain.

In *writing*, the dots or lines under the palatals will have to be retained. Still they take too much time thus employed to allow us to suppose that the Africans will retain them when they come to write for themselves. They will find some more current marks; as, for instance, by drawing the last stroke of the letter below the line. In writing, however, anybody may please himself, so long as the printer knows what is intended when he has to bring it before the public. As a hint to German missionaries, I beg to say that, for writing quickly in this new alphabet, they will find it useful in manuscript notes to employ German letters instead of italics.

An accidental, though by no means undesirable, advantage is gained by using italics to express the palatals. If we read that Sanskrit *vâch* (or *vâch*, or *vâtsch*) is the same as Latin *vox*, but that sometimes *vâch* in Sanskrit is *vâk* or *vâc*, the eye imagines that it has three different words to deal with. By means of italics, *vâk* and *vâk* are almost identical to the sight, as *kirk* and *kirk* (*church*), would be if English were ever to be transcribed into the missionary alphabet. The same applies to the verb, where the phonetic distinction between *vałmi*, *vakshi*, *vakti*, can thus be expressed without in any way disguising the etymological identity of the root. It would be wrong if we allowed the physiological principles of our alphabet to be modified for the sake of comparative philology; but where the phonetic changes of physiological sounds and the historical changes of words happen to run parallel, an alphabet, if well arranged, should be capable of giving this fact clear expression.

If the pronunciation of the palatals is deteriorated, they sometimes take the sound of *tch*, *ts*, *s*, *sh*, or even *th*. *Cœlum* (*κοῦλον*) becomes Italian *cielo*; where the initial sound is the same as in *church* (*kirk*). In old Friesic we have “*tzaka*” instead of English “*check*.” In French, “*ciel*” is pronounced with an initial sharp dental *s*; “*chose*,” with an initial sharp palatal *s*. In Spanish, the pronuncia-

tion of a c before e and i is that of the English th. In these cases when we have to deal with unwritten languages, the sounds, whether simple or double, should be traced to their proper phonetic category, and be written accordingly. It will be well, however, to bear in mind that pronunciation may change with time and vary in different places, and that the most general representation of these sounds by palatals or italicized gutturals will generally prove the best in the long run.

It must be clear that, with the principles followed hitherto, it would be impossible to make an exception in favour of the English j as representative of the palatal media. It would be a schism in the whole system, and would besides deprive us of those advantages which comparative philology derives from a consistent representation of modified sounds: that Sanskrit yuga (युग) is derived from "yug," to join, would be intelligible to everybody; while neither the German, to whom j is y, nor the Frenchman, nor the Spaniard would see the connexion between j and g.

The wish to retain the j is natural with Missionary Societies. It would enable us to spell uniformly the name of our Lord—and in all the translations of the Bible which the pious zeal of the mother country is now sowing over the virgin soil of Africa, Australia, and Asia, that one name at least would stand unaltered and uncorrupted in all tongues and all ages. But we may consider this from another point of view. As with other words, and with many of the most sacred in our own language, their full and real meaning seems to grow more clear and distinct the more the material body of the words changes and decays, and the more their etymological meaning becomes dim and forgotten, so will it be with the name of our Lord. Let the name grow and change and vary in all the tongues of the earth, and the very variety of the name will proclaim the unity of Him who has promised to all tongues the gift of His Holy Spirit. And would it avail, even if now we insisted on this point? A thousand years ago, and all the nations of Europe wrote and pronounced this name uniformly; but at the present day there are hardly two languages where the name is pronounced exactly alike; and in several the spelling has followed the pronunciation. It will ultimately be the same in Africa, whatever we do at present. But if

an exception is here to be made, let it be a single exception, while we retain the regular notation for every other word in which the pure palatal media occurs.

How to express Linguals ?

The linguals, as modifications of the dentals, have been hitherto written by common consent as dentals with dots or lines. In writing, this method must be retained, though no doubt a more current form will soon grow up if the alphabet is used by natives. They will probably draw the last stroke of the t and d below the line, and connect the body of the letter with the perpendicular line below. The linguals, therefore, will be, *ṭ*, *tḥ*, *ḍ*, *dḥ*; only here also the printer will step in and convert the dotted or underlined letters into italics, *t*, *th*, *ḍ*, *dh*.

I am at a loss how to mark that peculiar pronunciation of the dental aspirate, whether tenuis or media, which we write in English simply by *th*. It is not of frequent occurrence; still it occurs not only in European, but in Oriental languages,—for instance, in Burmese. If it occurs in a language where no trace of the pure dental aspirate remains, we might safely write *th* (and *dh*) or *tʰ* (and *dʰ*), as we do in English. The Anglo-Saxon letters *þ* and *ð* would be very convenient; but how few fonts, even in England, possess these forms! Again, *ʒh* and *zʰ*, and even *ʒ'* and *ʒ'*, have been proposed; but they are liable to still stronger objections. Where it is necessary to distinguish the aspirated *th* and *dh* from the assibilated, I propose for the latter a dot under the *h* (*tḥ* and *dḥ*). But I think *th* and *dh* will, on the whole, be found to answer all practical purposes, if we only look to people who have to write and read their own language. Philologists, whatever we attempt, cannot be informed of every nicety and shade in pronunciation by the eye. They must learn from grammars or from personal intercourse in what manner each tribe pronounces its dental aspirate; and comparative philology will find all its ends answered if *th* represents the organic dental aspirate, until its pronunciation deteriorates so far as to make it a flatus or a double consonant. In this case the Missionary also will have to write it *ts*, or *ss*, or whatever sound he may happen to hear.

The five principal classes of physiological sounds would, therefore, have the following typographic exponents:—

	Tenuis.	Tenuis asp.	Media.	Media asp.
Guttural	k	kḥ	g	gḥ
Palatal	ḥ	ḥḥ	g	gḥ
Dental	t	tḥ (tḥ)	d	dḥ (dḥ)
Lingual	t	tḥ	d	dḥ
Labial	p	pḥ	b	bḥ

How to express the Nasals ?

In each of these five classes we have now to look for an exponent of the nasal.

Where the nasal is modified by the following consonant, it requires no modified sign, for reasons explained in the first part of our essay. The nasal in sink and sing is guttural; in inch and injure, palatal; in hint and bind, dental; in imp and dumb, labial.

But where these nasals occur at the beginning of words or at the end of syllables, each must have its own mark. Let the dental nasal be n, the labial nasal m, the lingual nasal *n*. Where the guttural nasal is really so evanescent as not to bear expression by ng, we must write n and a dot after it (n·), which makes no difficulty in printing, and will very rarely occur. What we call the palatal n is generally not a simple but a compound nasal, and should be written ny. For transliterating, however, we want a distinct sign, because the palatal nasal exists as a simple type in Sanskrit, and every single type must be transliterated by a single letter. Here I should propose the Spanish ñ.

The lingual n occurs in Sanskrit only. Its character is generally determined by lingual letters either following or preceding. Still, where it must be marked in Sanskrit transliterations, let it be represented by an italic *n*.

How to express the Semi-vowels ?

The Latin letters which naturally offer themselves as the counterparts of the semi-vowels, are 'h, y, r, l, and w.

The delicate sound of the guttural semi-vowel occurs very rarely in Arian languages. In Semitic dialects, however, the γ has usually been considered as the guttural semi-vowel. In Hebrew it is sometimes not pronounced at all, or, as we should say, it is changed into the flatus lenis; whence, in the Arabic alphabet, to remove this ambiguity and to show in every word the full or weak pronunciation of the guttural semi-vowel, the γ was split in two: the one, the ξ , little more than the flatus lenis; the other, the ξ' , the hollow guttural semi-vowel which only a Semitic throat is able to utter, and which comes very near to the guttural flatus asper as heard in "loch."

The palatal semi-vowel is usually transcribed in Germany by j , which, as far as archæological arguments go, would certainly be the most appropriate sign to represent the semi-vowel corresponding to the palatal vowel i . As, however, the j is one of the most variously pronounced letters in Europe, and as in England it has been usual to employ it as a palatal media, it is better to discard it altogether from our alphabet, and to write y .

The lingual semi-vowel is r ; if in some dialects the r is pronounced very near to the throat, this might be marked by an italic r , or rh .

The dental semi-vowel is written l . The *mouillé* sound of l may be expressed by an italic l .

Where the labial semi-vowel is formed by the lips, let it be written w . More usually it is formed by the upper lip and the edge of the lower teeth. It then becomes what the Hindus call a labio-dental semi-vowel, but is hardly to be distinguished from the labial flatus lenis.

How to express the Flatus (Sibilants)?

As the unmodified flatus, or, as it should more properly be called, the spiritus asper and lenis, can only occur before a vowel, the printer will find no difficulty in representing these two sounds by the usual signs $'$ and $''$ placed before or over the vowel which follows. At the beginning of words there could be no reasonable objection to this mode of representing the very slight and hardly consonantal sound of the spiritus asper and lenis. But it will take some time before our eyes are accustomed to it in the middle of words. In such cases the Greeks did not mark it. They wrote $\alpha\rho\mu\alpha$, chariot,

but *εὐάρματος*, with beautiful chariots; they wrote *ἀνὴρ*, man, but *εὐανδρία*, manliness. Nor in fact does there seem to be any necessity for marking the spiritus lenis in the middle of words. Every vowel beginning a syllable has necessarily the spiritus lenis; as going, seeing. As to the spiritus asper, which we have in “vehement,” “vehicle,” I fear that “ve’ement,” “ve’icle,” will be objected to by the printer. If so, we have still the *h* as a last resource to express the spiritus asper in this position.

The guttural flatus asper, as heard in *loch*, might be expressed by an Italic *h*. The flatus lenis cannot be distinguished in pronunciation from the guttural semi-vowel, and has therefore never received an alphabetical exponent. If it should be necessary, however, to assign a type to this physiological category, we should be obliged to write the flatus asper by ‘*h*, and the flatus lenis by ‘*h*.

The dental flatus sibilans, pronounced sharp as in “sin” or “grass,” has, of course, the best claims on the letter *s* as its representative. Its corresponding soft sound, as heard in *please* or *zeal*, is best expressed by *z*; only we must take care not to pronounce it like the German *z*. The more consistent way of expressing the sonant flatus would be to put a spiritus lenis over the *s*. This, however, would hardly be tolerated, and would be against the Third Resolution of our alphabetical conferences, where it was agreed that only *after* the Roman types, and the modifications of Roman types as supplied by common fonts (capitals, italics, &c.), had been exhausted, diacritical signs should be admitted into the standard alphabet.

As all palatals are represented by italics, the palatal sibilant would naturally be written with an italic *s*. This would represent the sharp sound as heard in “sharp” or “chose.” The soft palatal sibilant would have the same exponent as the soft dental sibilant, only changed into italics (*z*). This would be the proper sign for the French sound in “je,” “genou,” and for the African soft palatal sibilant, which, as Dr. Krapf, Mr. Tutschek, and Mr. Boyce remark, will never be properly pronounced by an adult European.

Where it is necessary to express the original, not yet assibilated, palatal flatus, which is heard in *könig* and *kön’ge*, an italic *y*, with the spiritus asper and lenis, would answer the purpose (*ý* and *ÿ*).

The labial flatus should be written by *f*. This is the sharp flatus,

as heard in “life” and “find.” The soft labial flatus ought consistently to be written as *f* with a spiritus lenis. But here again I fear we must sacrifice consistency to expediency, and adopt that sign with which we are familiar, the Latin *v*. As we express the labial semi-vowel by *w*, the *v* is still at our disposal, and will probably be preferred by the unanimous votes of missionaries and printers.

The lingual flatus is a sound peculiar to Sanskrit, and, owing to its hollow guttural pronunciation, it may be expressed there, as it has been hitherto, by *s* followed by the guttural *h* (*sh*). The Sanskrit knows no soft sibilants; hence we require but one representation for the lingual *sh*.

The different categories of consonantal sounds which we represented at the end of the first chapter by means of English words may now be filled out by the following graphic exponents:—

	<i>a.</i>	<i>b.</i>	<i>c.</i>	<i>d.</i>	<i>e.</i>	<i>f.</i>	<i>g.</i>
	Tenuis.	Tenuis asp.	Media.	Media asp.	Nasalis.	Semi- vocalis.	Flatus sibilans. asp. len.
I. Guttur.	<i>k</i>	<i>kʰ</i>	<i>g</i>	<i>gʰ</i>	<i>n.</i>	<i>ʰ</i>	<i>ʰ</i> <i>ʰ</i>
II. Pal.	<i>k</i>	<i>kh</i>	<i>g</i>	<i>gh</i>	<i>ñ</i>	<i>y</i>	<i>s</i> <i>z</i>
III. Dent.	<i>t</i>	<i>tʰ</i>	<i>d</i>	<i>dʰ</i>	<i>n</i>	<i>l</i> (<i>l</i>)	<i>s</i> <i>z</i>
IV. Ling.	<i>t</i>	<i>th</i>	<i>d</i>	<i>dh</i>	<i>n</i>	<i>r</i> (<i>r</i>)	<i>sh</i> -
V. Labial.	<i>p</i>	<i>pʰ</i>	<i>b</i>	<i>bʰ</i>	<i>m</i>	<i>w</i>	<i>f</i> <i>v</i>

Spiritus asper : ' .

Spiritus lenis : ' .

Although these exponents of the physiological categories of articulated sound have not been chosen because their present pronunciation in English, or French, or German is nearest to that physiological category which each has to represent, still, as we have avoided letters of which the pronunciation fluctuates very much (such as *c*, *j*, *x*, *q*), it will be found, on the whole, that little violence is done by this alphabet to the genius of any of these languages, and that neither an Englishman, nor a German, nor a Frenchman will ever feel much hesitation as to how any one of our letters should be pronounced.

Vowels.

The pronunciation of the vowels is more liable to change than that of the consonants. Hence we find that literary languages, which

retain their orthography in spite of changes in pronunciation, have no scruple in expressing different sounds by the same sign; or, where two originally different vowels have sunk down to one and the same intermediate sound, we see this same sound expressed often by two different vowels. In the selection, therefore, of letters to express the general vowel sounds of our physiological alphabet, we can pay less attention to the present value of each vowel sign in the spoken languages of Europe than we did even with the consonants. And as there it was impossible, without creating an unwieldy mass of consonantal signs, to express all the slight shades of pronunciation by distinct letters, we shall have to make still greater allowance for dialectical varieties in the representation of vowels, where it would be hopeless should we attempt to depict in writing every minute degree in the sliding scale of native or foreign pronunciation.

The reason why, in most systems of phonetic transcription, the Italian pronunciation of vowels has been taken as normal, is, no doubt, that in Italian most vowel signs have but one sound, and the same sound is generally expressed by one and the same vowel. We propose, therefore, as in Italian, to represent the pure guttural vowel by *a*, the pure palatal vowel by *i*, and the pure labial vowel by *u*.

Besides the short *a*, we want one, or according to others, two graphic signs to represent the unmodified sound of the vocal breathing, which may be deflected from its purity by a slight and almost imperceptible palatal or labial pressure. These are the sounds which we have in "birch" and "work," and which, where they must be distinguished, we propose to write *ě* and *ő*. As we do not want the signs of \sim and $\bar{\sim}$ to mark the quantity of vowels, we may here be allowed to use this sign \sim to indicate indistinctness rather than brevity.

In most languages, however, *one* sign will be sufficient to express this primitive vowel; and in this case the figure *O* has been recommended as a fit representative of this undetermined vowel.

Among the languages which have an alphabet of their own, some, as, for instance, Sanskrit, do not express these sounds by any peculiar sign, but use the short *a* instead. Other languages express both sounds by one sign; for instance, the Hebrew *Shewa*, the pronunciation of which would naturally be influenced, or, so to say, coloured either by the preceding or the following letter. Other idioms again,

like Latin, seem to express this indistinct sound by e, i, o, or u. Besides the long e in *res* and the short e in *celer*, we have the indistinct ě in words like *adversum* and *advorsum*, *septimus* and *septumus*, where the Hindus write uniformly *saptama*, but pronounced it probably with vowels varying as in Greek and Latin. Besides the long o in *odi*, and the short o as in *moneo*, we have the indistinct o or u in *orbs* or *urbs*, in *bonom* or *bonum*. In Wallachian, every vowel that has been reduced to this obscure, indefinite sound, is marked by an accent, à, é, i, ò, ù; but if Wallachian is written with Cyrillic letters, the ‘Yerr’ (ѣ) is used as the uniform representative of all these vowels. In living languages one sign, the figure O, will be found sufficient, and in some cases it may be dispensed with altogether, as a slight Shewa sound, is necessarily pronounced, whether written or not, in words such as *mil-k*, *mar-sh*, *el-m*, &c. The marks of quantity, ˘ and ˘˘, are superfluous in our alphabet; not that it is not always desirable to mark the quantity of vowels, but because here again, as with the dotted consonant, a long syllable can be marked by the vowel in italics, while every other vowel is to be taken as short. Thus we should write in English *bath*, *bar*, but *ass*, *bank*; *ravine*, and *pin*; *but* (i.e. *boot*), and *butcher*. We should know at once that *a* in *bath* is long, while in *ass* it is short.

All compound vowel sounds should be written according to the process of their formation. Two only, which are of most frequent occurrence, the guttural short a, absorbed by either i or u, might perhaps be allowed to retain their usual signs, and be written e and o, instead of ai and au. The only reason, however, which can be given for writing e and o, instead of ai and au, is that we save a letter in writing; and this, considering how many millions of people may in the course of time have to use this alphabet, may be a saving of millions and millions of precious seconds. The more consistent way would be to express the gutturo-palatal sound of the Italian e by ai, the a being short. The French do the same in “*aimer*,” while in English this sound is expressed by ey in *prey*, by ay in *pray*, by a in *gate*, and by ai in *sailor*. The gutturo-labial sound of the Italian o should be written au, which the French pronounce o. For etymological purposes also this plan would be preferable, as it frequently happens that an o (au), if followed by a vowel, has to be pronounced

av. Thus in Sanskrit *bhu*, to be, becomes *bhau* (pronounced *bho*), and if followed by *ami*, it becomes *bhav-ami*, I am.

The diphthongs, where the full or long-guttural *a* is followed by *i* and *u*, should be written *ai* and *au*. "To buy" would have to be written *bai*; to bow, *bau*. Whether *au* coalesce entirely, as in German, or less so, as in Italian, is a point which in each language must be learned by ear, not by eye.

Most people would not be able to distinguish between *ai* and *ei*. Still some maintain that there is a difference; as, for instance, in German *kaiser* and *eis*. Even in English the sound of *ie* in "he lies" is said to be different from that of "he lies." Where it is necessary to mark this distinction, our diagram readily supplies *ai* and *ei*.

The diphthong *eu* is generally pronounced so that the two vowels are heard in succession, as in Italian *Europa*. Pronounced more quickly, as, for instance, in German, it approaches to the English sound of *oy* in *boy*. According to our diagram, we should have to write *ëi* and *ëu*; but *ei* and *eu* will be preferable for practical purposes.

The same applies to the diphthong *öi*. Here, also, both vowels can still be heard more or less distinctly. This more or less cannot be expressed in writing, but must be learned by practice.

The last diphthong, on the contrary, is generally pronounced like one sound, and the deep guttural *O* seems to be followed, not by the vowel *u*, but only by an attempt to pronounce this vowel, which attempt ends, as it were, with the semi-vowel *w*, instead of the vowel. In English we have this sound in *bought*, *ought*, *saw*; and also in *fall* and *all*.

The proper representation of these diphthongs would be *öi* and *öu*; but *oi* and *ou* will be found to answer the purpose as well, except in philological works.

For representing the broken sounds of *a*, *o*, *u*, which we have in German *väter*, *höhe*, *güte*, in the French *prêtre*, *peu*, and *une*, but which the English avoids as sounds requiring too great an effort, no better signs offer themselves than *ä*, *ö*, *ü*. They are objectionable because they are not found in every English font. For the Tataric languages a fourth sound is required, a broken or soft *i*. This, too, we must write *ï*.

The Sanskrit vowels, commonly called lingual and dental, are best expressed by *ri* and *li*, where, by writing the *r* and *l* as italics, no ambiguity can arise between the vowels *ri* and *li*, and the semi-vowels *r* and *l*, followed by *i*. Instead of *i*, *ĕ* also or the figure 0 may be used.

Thus have all the principal consonantal and vowel sounds been classified physiologically and represented graphically. All the distinctions which it can ever be important to express have been expressed by means of the Roman alphabet without the introduction of foreign letters, and without using dots, hooks, lines, accents, or any other diacritical signs. I do not deny that for more minute points, particularly in philological treatises, new sounds and new signs will be required. In Sanskrit we have Visarga and the real Anusvara (the Nasikya), which will require distinct signs (*h*, *m*) in transliteration. In some African languages, clicks, unless they can be abolished in speaking, will have to be represented in writing. On points like these an agreement will be difficult, nor would it be possible to provide for all emergencies. It is an advantage, however, that we still have the *c*, *j*, and *x* at our disposal to express the dental, palatal, and lateral clicks. Further particulars on this and similar points I must reserve for a future occasion, and refer the reader, in the mean time, to the very able article of the Rev. L. Grout, alluded to before. But I cannot leave this subject without expressing at least a strong hope that, by the influence of the Missionaries, these brutal sounds will be in time abolished, at least among the Kaffirs, though it may be impossible to eradicate them in the degraded Hottentot dialects. It is clear that they are not essential in the Kaffir languages, for they never occur in Sechuana and other branches of the great Kaffir family.

If uniformity can be obtained with regard to the forty-four consonantal and the twenty-four vocal sounds, which are the principal modulations of the human voice fixed and sanctioned in the history of language, so far as it is known at present; if these sounds are always accepted, as defined above, solely on physiological grounds, and henceforth expressed in those letters alone which have been allotted to them solely for practical reasons, a great step will have been made towards facilitating the intellectual intercourse of mankind and spreading the truths of Christianity.

But the realisation of this plan will mainly depend, not on ingenious arguments, but on good-will and ready co-operation.

III.

How can this Physiological Alphabet be applied to existing Languages?

a. *To unwritten Languages.*

After the explanations contained in the first and second parts, there is little more to be said on this point.

The missionary who attempts to write down for the first time a spoken language, should have a thorough knowledge of the physiological alphabet, and have practised it beforehand on his own language or on other dialects the pronunciation of which he knows.

He should put from recollection, as much as possible, the historical orthography of German, English, French, or whatever his language may be, and accustom himself to write down every spoken sound under the nearest physiological category to which it seems to belong. He should first of all endeavour to recognise the principal sounds, guttural, dental, and labial, in the language he desires to dissect and to delineate; and where doubtful whether he hears a simple or a modified secondary sound, such as have been described in our alphabet, he should always incline to the simple as the more original and general.

He should never be guided by etymological impressions. This is a great temptation, but it should be resisted. If we had to write the French word for knee, we should feel inclined, knowing that it sounds *ginokyo* in Italian and *genu* in Latin, to write it *gënu*. But in French the initial palatal sound is no longer produced by contact, but by a sibilant flatus, and we should therefore have to write *zënu*. If we had to write down the English sound of knee, we should probably, for the same reason, be willing to persuade ourselves that we still perceived, in the pronunciation of the *n* the former presence of the initial *k*. Still no one but an etymologist could detect it, and its sound should be represented in the Missionary alphabet by “*ni*.”

Those who know the difficulty of determining the spelling of words according to their etymology, even in French or English, although we can follow the history of these languages for centuries, and although the most eminent grammarians have been engaged in analysing their structure, will feel how essential it is, in a first attempt to fix a spoken language, that the writer should not be swayed by any hasty etymo-

logical theories. The Missionary should give a true transcript of a spoken language, and leave it to others to decipher it. He who, instead of doing this, attempts, according to his own theories, to improve upon the irregular utterance of savages, would deprive us of authentic documents the loss of which is irreparable. He would act like a traveller who, after copying an inscription according to what he thought, ought to have been its meaning, destroyed the original; nay, he may falsify unawares the ethnic history of the human race.

Several sentences having been once written down, the Missionary should put them by for a time, and then read them aloud to the natives. If they understand what he reads, and if they understand it even if read by somebody else, his work has been successful, and a translation of the Bible carried out on these principles among Papuas or Khyengs will assuredly one day become the basis for the literature of the future.

Although the basis of our Standard Alphabet is purely physiological, still no letter has been admitted into it, which does not actually occur in one of the well known languages of Asia or Europe. The number of letters might easily have been increased, if we had attempted to represent all the slight shades of pronunciation, which affect certain letters in different languages, dialects, patois, or in the mouth of individuals. But to increase the number of letters is tantamount to diminishing the usefulness of an alphabet.

It may happen, indeed, as we become acquainted, through the persevering labours of Missionaries, with the numerous tongues of Africa, Polynesia, and Asia, that new sounds will have to be acknowledged, and will have an independent place allotted to them in our system. But here it should be a principle, as binding as any of the principles which have guided us in the composition of our alphabet, that

“ No new sound should ever be acknowledged as such, until we are able to give a clear and scientific definition of it on physiological grounds.”

We are too prone perhaps to imagine, particularly where we have to deal with languages gathered from the mouth of a single interpreter, or in the intercourse with a few travellers, that we hear sounds of an entirely new character, and apparently requiring a new sign.

But if we heard the same language spoken for a number of years and by a thousand speakers, the natural variety of pronunciation would make our ears less sensitive, and more capable of appreciating the general rule, in spite of individual exceptions. We are not accustomed to pay attention to each consonant and vowel, as they are pronounced in our own language; and if we try for the first time to analyse each word as we hear it, and to write down every vowel and consonant in a language we do not understand, say Russian or Welsh, we shall be able to appreciate the difficulties which a Missionary has to overcome, if he tries to fix a language alphabetically, before he himself can converse in it freely. It has happened, that travellers collecting the dialects of tribes in the Caucasus or on the frontiers of India, have brought home and published lists of words gathered on the same spot and from the same people, and yet so different in their alphabetical appearances, that the same dialect has figured in ethnological works, under two different names. Much must be left to the discretion of Missionaries; for in most cases it is impossible to control the observations which they have made in countries hitherto unexplored, and in dialects known to themselves alone. But it will be found that Missionaries who know their language best, and have used it for the greatest number of years, familiar thus with all its sounds and accents, are least clamorous for new types, and most willing to indicate, in a general manner, what they know can never be represented with perfect accuracy. Too much distinction leads to confusion, and it shows a spirit of wise economy in the Phœnician, the Greek, the Roman, and Teutonic nations, that they have contrived to express the endless variety of their pronunciation by so small a number of letters, rather than invent new signs and establish new distinctions. Attempts have been made occasionally, at Rome and elsewhere, to introduce new letters; but they have failed; and though *we* may feel no scruple to introduce new signs, and marks and accents into the African alphabets; though *we*, with our resources, may succeed for a time in framing an alphabet of our own where each letter, besides its simple value, has two or three additional values expressed by one, two, or three accents piled one upon the other,—common sense, without appealing to history, should teach us, that Africa will never bear what Europe has found insupportable.

The following alphabet, taken out of the general system of sounds, defined physiologically and represented graphically in the preceding pages, will be found to supply all that is necessary for the ordinary purposes of the Missionary, in his relation to tribes whom he has to teach the writing and reading of their own spoken language, pronounced inevitably by them with shades of sound that no alphabet can render. In philological works intended for a European public, the case will be different. Here it will be necessary to represent the accents of words, the quantities of vowels, and other features essential for grammatical purposes. Here the larger alphabet will come in; and it will always prove a reserve-fund to the scholar and Missionary, from which they can draw, after their usual supply of letters has been exhausted.

It should be borne in mind, that although in this smaller alphabet it would be easy to suggest improvements, no partial alteration can be made with any single letter, without disturbing at once the whole system of which it is but a segment.

Missionary Alphabet.

1.	a, a	Sam, psalm.		22.	z	zeal.
2.	b	bed.				—
3.	d	dock.		23.	g	join, gin.
4.	e, e	debt, date.		24.	k	church.
5.	f	fat.		25.	ng (n·)	English.
6.	g	gate.		26.	ny (ñ)	España, new.
7.	h (‘)	hand.		27.	h (‘h)	loch.
8.	i, i	knit, neat.		28.	s	she.
9.	k	kite.		29.	z	pleasure.
10.	l	let.		30.	th	thin.
11.	m	man.		31.	dh	the.
12.	n	not.				—
13.	o, o	not, note.		32.	o (ö, ö)	but, birch, work.
14.	p	pan.		33.	ai	ire.
15.	r	run.		34.	au	prond.
16.	s	sun.		35.	oi	voice.
17.	t	tan.		36.	ou	bought.
18.	u, u	full, fool.		37.	ä	Väter.
19.	v	vail.		38.	ö	König.
20.	w	will.		39.	ü	Güte.
21.	y	yet.				

If we compare this list of letters with the Anglo-Hindustáni alphabet, so ably advocated by Sir Charles Trevelyan, the differences between the two are indeed but small ; and if we had only to agree upon a small alphabet sufficient to express the sounds of the spoken Hindustáni, there is no reason why the Anglo-Hindustáni alphabet should not be adopted. It expresses the general sounds which occur in Oriental dialects, and it employs but five dotted letters, for which new types would be required.

The defects of this system become apparent, however, as soon as we try to expand it ; and we are obliged to do this even in order to write Hindustáni, unless we are ready to sacrifice the etymological distinction of words by expressing ھ and ح by h, س, ث, and ص by s, ت and ط by t, and ز, ن, ض, and ظ by z. If distinct types must be invented to distinguish these letters, the array of dotted letters will be considerably increased. Even in Hindustáni we should have to use different diacritical marks where we have to express two, three, or four modifications of the same type ; and it would become extremely perplexing to remember the meaning of all these marks. Our difficulties would be considerably increased if we tried to adapt the same letters to more developed alphabets, like Sanskrit and Arabic ; and if we went on adding hooks and crooks, crosses and half-moons, dots and accents, &c., we should in the end have more modified than simple types.

These modified types might, no doubt, be reduced to a certain system ; and, after determining the possible modifications of guttural and dental consonants, each diacritical mark might be used as the exponent of but one modification. A glance at the comparative table of the different systems of transliteration will show how this has been achieved by different scholars more or less successfully.

But it is only after this has been done, after all letters have been classified, after their possible modifications have been determined, after each modification has been provisionally marked by a certain exponent — such as the accent for expressing the palatal, dots for expressing the lingual modification, — it is *then* only that the real problem presents itself : “ How can all these sounds be expressed by us in writing and printing, without sacrificing all chances of arriving

in the end at one uniform and universal alphabet?" It is clear that every type that has to be compounded or cast afresh is an impediment in the progress of uniformity, because those who have once provided themselves with diacritical types will not change them for others, and those who have but a common English font at their disposal will express the necessary modifications as best they can. The question, then, that must be solved, is not whether we should take dots or hooks, but whether it is possible to express all essential modifications in such a manner as to take away all excuse for individual crotchets, by proposing an expedient accessible to every one. This can be done if we avail ourselves of the resources of our fonts, which invariably contain a supply of one class of modified letters—italics. Many scholars, from Halhed down to Ellis, have seen the use to which these letters could be put in transliterating Oriental languages; but they have not hitherto been employed systematically. The principle by which we have been guided in making use of italics is this :

As in each language most letters are liable to but one modification, let that modification, whatever it be, be expressed by italics.

We thus reduce the number of letters, in our physiological alphabet, that require diacritical marks, on account of their being liable to more than one modification in the same language, to two : and while our Missionary alphabet is thus accessible in every part of the world, we reserve our few diacritical dots to the purposes of transliteration, where, as in Arabic, we may have to represent the same type with more than one diacritical mark.

b. *To written Languages.*

Though this is a question which for the present hardly falls within the compass of Missionary labours, still it may be useful to show that, if required, our alphabet would also be found applicable to the transliteration of written languages. Besides, wherever Missionary influence is powerful enough, it should certainly be exerted towards breaking down those barriers which, in the shape of different alphabets, prevent the free intercourse of the nations of the East.

The philologist and the archæologist must, indeed, acquire a knowledge of these alphabets, as in the case when their study is a language extinct, and existing, perhaps, in the form of inscriptions alone. But where there is no important national literature clinging to a national alphabet, where there are but incipient traces of a reviving civilisation, the multiplicity of alphabets—the worthless remnant of a bygone civilisation bequeathed, for instance, to the natives of India—should be attacked as zealously by the Missionary as the multiplicity of castes and of divinities. In the Dekhan alone, with hardly any literature of either national or general importance, we have six different alphabets—the Telugu, Tamil, Canarese, Malabar, Tuluva, and Singhalese—all extremely difficult and inconvenient for practical purposes. Likewise, in the northern dialects of India almost every one has its own corruption of the Sanskrit alphabet, sufficiently distinct to make it impossible for a Bengalese to read Guzerati, and for a Mahratta to read Kashmirian letters. Why has no attempt been made to interfere, and recognise at least but one Sanskritic alphabet for all the northern, and one Tamulian alphabet for all the southern, languages of India? In the present state of the country, it would be bold and wise to go even beyond this; for there is very little that deserves the name of a national literature in the modern dialects of the Hindus. The sacred, legal, and poetical literature of India is either Arabic, Persian, or Sanskrit. Little has grown up since, in the spoken languages of the day. Now it would be hopeless, should it ever be attempted, to eradicate the spoken dialects of India, and to supplant them by Persian or English. In a country so little concentrated, so thinly governed, so slightly educated, we cannot even touch at present what we wish to eradicate. If India were laid open by highroads, reduced by railways, and colonised by officials, the attempt might be conceivable, though, as to anything like success, a trip through Wales, and a glance at the history of England, would be a sufficient answer. But what might be done in India, perhaps even now, is to supplant the various native alphabets by Roman letters. The people in India who can write are just the men most open to Government influence. If the Roman alphabet were taught in the village schools—of late much encouraged by the Government, particularly in the north-western provinces—if all official documents, in

whatever language, had to be transcribed into Roman letters to obtain legal value ; if the Government would issue all laws and proclamations transcribed in Roman characters, and Missionaries do the same with their translations of the Bible and other works published in any dialect of India, I think we might live to see one alphabet used from the “snows” to Ceylon.

Let us see, then, how our physiological Missionary alphabet could be applied to languages which have not only an alphabet of their own, but also an established system of orthography.

We have here to admit two leading principles :—

First, that in transliterating written languages, every letter, however much its pronunciation may vary, should always be represented by the same Roman type, and that every Roman type should always represent the same foreign letter, whatever its phonetic value may be in different combinations.

Secondly, that every double letter, though in pronunciation it may be simple, should be transliterated by a double letter, and that a single letter, although its pronunciation be that of a double letter, should be transliterated by a single letter.

If these two principles be strictly observed, everyone will be able to translate in his mind a Canarese book, written with Roman letters, back into Canarese letters, without losing a tittle of the peculiar orthography of Canarese. If we attempted to represent the sounds in transcribing literary languages, we should be unable to tell how, in the original, sounds admitting of several graphic representations were represented. In written languages, therefore, we must rest satisfied with transliterating letters, and not attempt to transcribe sounds.

This will cause certain difficulties, particularly in languages where pronunciation and spelling differ considerably. In Arabic we must write al ra'hman, though we pronounce arra'hman ; and even in Greek, if we had to transliterate ἐγγύς, we should, no doubt, have to write 'eggus, though none but a Greek scholar would know how to pronounce this correctly ('engüs). But if, instead of imitating the letters, we attempted to represent their proper pronunciation at a certain period of history, how should it be known, for instance, in transcribing the French of the nineteenth century, whether “su” stood for “sou,”

halfpenny, or "sous," under, or "soul," tipsy. In historical languages the system of orthography is too important a point to be lost in transcribing, though it is a mistake to imagine that in living languages all etymological understanding would be lost if phonetic reforms were introduced. The change in the pronunciation of words, though it may seem capricious, is more uniform and regular than we imagine; and if all words were written alike according to a certain system of phonetics, we should lose very little more of etymology than we have already lost. Nay, in some cases, the etymology would be re-established by a more consistent phonetic spelling. If we wrote "foreign" "forĕn," and "sovereign" "soverĕn," we should not be led to imagine that either was derived from "reign," regnum, and the analogy of such words as "Africĕn" would point out "foranus" or "foraneus" as the proper etymon of "forĕn." But although every nation has the right to reform the orthography of its language, with all things else, where usage has too far receded from original intention, still, so long as a literary language maintains its historical spelling, the principle of transliteration must be to represent letter by letter, not sound by sound.

Which letter in our physiological alphabet should be fixed upon as the fittest representative of another letter in Arabic or Sanskrit, in Hindustáni or Canarese, must in each case depend on special agreement. If we found that ॠ in Sanskrit had in most words the nature of the guttural spiritus, we should have to write it ' or h, even though in some respects it may represent the guttural semi-vowel. If y in Hebrew can be proved to have been originally the simple guttural semi-vowel, it will have to be written 'h, even though it was pronounced as semi-vocalis fricata ('h), as guttural flatus asper ('h), as guttural media aspirata (gh), or not pronounced at all. Likewise, if English were to be transliterated with our alphabet, we should not adopt any of the principles of the "Fonetic Nus;" but here also, if the letter h had been fixed upon as on the whole the fittest representative of the English letter h, we should have to write it even where it was not pronounced, as in honest.

It will be the duty of Academies and scientific societies to settle, for the principal languages, which letters in the Missionary alphabet will best express their corresponding alphabetical signs.

The first question, taking a type, for instance, of the Sanskrit alphabet, would be, "What is its most usual and most original value?" If this be fixed, then, "Is there another type which has a better claim to this value?" If so, their claims must be weighed and adjusted. When this question is settled, and the physiological category is found under which the Sanskrit type has its proper place, we have then to look for the exponent of this physiological category in the Missionary alphabet, and henceforth always to transliterate the one by the other.

The following lists will show how some of the Arian, Semitic, and Turanian languages have been transliterated, and how all these alphabets and their transcriptions can be expressed by means of the Missionary alphabet. Objections, I am aware, can hardly fail to be raised on several points, because the original character of several Hebrew, Arabic, and Sanskrit letters has been so frequently controverted. If the disputed value of these letters can be clearly settled by argument, be it so; and it will then never be difficult to find the exponent of that physiological category to which it has been adjudged. Failing this, the question should be decided by authority or agreement; for, of two views which are equally plausible, we must, for practical purposes, manifestly confine ourselves to one.

TEXT OF A HYMN OF THE RIGVEDA,

TRANSCRIBED WITH THE MISSIONARY ALPHABET.

Na-asad *asin*, no sad *asit tadanim*, na-*asid rago*, no *vyoma paro yat*,
 Kim *avarivah* ? kuha *kasya sarmann* ? *ambbah kim asid gahanam gabhiram* ?
 Na *mrityur asid*, *amritam na tarhi* ; na *ratrya alna asit praketah* —
Anid avatam svadhaya tad ekam, *tasmad dha-anyam na parah kimha na-asa*.
Tama asit, *tamasa gulham agre 'praketam salilam sarvam a idam*,
Tukhyena-abhv apihitam yad asit tapasas tan mahina-agayata-ekam.
Kamas tad agre samavartata-adhi, *manaso retah prathamam yad asit*,
Sato bandhum asati niravindan hridi pratishya kavayo manisha.
Tiraskino vitato rasmir esham adha svid asid ? upari svid asit ? —
Retodha asan, *mahimana asant*, *svadha avastat*, *prayatih parastat*.
Ko addha veda, *ka iha pravokat*, *kuta agata kuta iyam visrishih ?*
Arvag deva asya visarganena-atha ko veda yata ababhuvu ?
Iyam visrishir yata ababhuvu, *yadi va dadhe yadi va na*,
Yo asya-adhyakshah parame vyomant, *so anga veda—yadi va na veda*.

Oxford, Christmas, 1853.

THE END.

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New-street-Square.

COMPARATIVE TABLE

SHOWING

SOME OF THE CHIEF SYSTEMS OF TRANSCRIPTION AND TRANSLITERATION HITHERTO

AND THEIR

CORRESPONDENCE WITH THE MISSIONARY ALPHABET

	Missionary Alphabet.	SANSKRIT.	Halhed.	Gilchrist.	Wilkins.	Sir W. Jones.	Wilson.	Wilson, 1854.	Schlegel.	Humboldt.	Klaproth.	Bopp.	Burnouf.	Lassen.	Pott.	Brockhaus.	Weber.	Roth.	Schleicher.	ZEND.	Burnouf.	Bopp.	Brockhaus.	
Gutturalis																								
1. tenuis - - -	k	क	k	k	k	c	k	k	k	k	k	k	k	k	k	k	k	k	k	𑀓	k	k	k	
2. „ aspirata - -	kh	ख	k,h	k,h	kh	c'h	kh	kh	kh	kh	k'(kh)	k	kh	kh	kh	kh	kh	kh	kh	𑀔	kh	c	kh	
3. media - - -	g	ग	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	𑀕	g	g	g	
4. „ aspirata - -	gh	घ	g,h	g,h	gh	g'h	gh	gh	gh	gh	g'	g'	gh	gh	gh	gh	gh	gh	gh	𑀖	gh	gh	gh	
5. tenuissima - -	q	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	𑀗	q	kh	q	
6. nasalis - - -	n'	ङ	ng	n	ng	n'	n'	n'	n	n	ng	n	ng	n	n	n	ng	n	n	𑀘	ng	n	n	
7. semivocalis - -	'h	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		ng	n	n	
8. „ fricata - - -	''h	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
9. spiritus asper - -	'(h)	ह	h	h	h	h	h	h	h	h	h	h	h	h	h	h	h	h	h	𑀙	h	h	h	
10. „ lenis - - -	'	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
11. flatus asper - -	'h	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
12. „ lenis - - -	'h	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Palatalis																								
13. tenuis - - -	h	च	ch	ch	ch	ch	ch	ch	ch	च	c'	tch	k'	tsh	c	c	c	c	k'	𑀚	tch	c'	c	
14. „ aspirata - -	hh	छ	ch,h	ch,h	ch'h	ch,h	chh	chh	chh	- - -	c''	tchh	k'h	tshh	ch	ch	ch	ch	k'h	- - -	- - -	- - -	- - -	
15. media - - -	g	ज	j	j	j	j	j	j	j	d+e	g'	dj	g'	dsh	j	j	g'	g'	g'	𑀛	dj	g'	j	
16. „ aspirata - -	gh	झ	j,h	j,h	jh	jh	jh	jh	jh	- - -	g''	djh	g'h	dshh	jh	jh	g'h	g'h	g'h	- - -	- - -	- - -	- - -	
17. nasalis - - -	n̄	ञ	gn	n	ny	ny	n̄	n̄	n̄	- - -	n	n̄	n	n	n̄	n̄	n	n	n	𑀜	n̄	n	n̄	
18. semivocalis - -	y	य	jy	y	y	y	y	y	y	j	j'(i)	y	j	j	y	y	j	j	j	𑀝	y	y	y	
19. flatus asper - -	s(y)	श	sh	fh	ś	ś	ś	ś	ś	ш	ś'	ś'	ś'	ś'	ś'	ś'	ś'	ś'	ś'		ś'	ś'	ś'	ś'
20. „ lenis - - -	z(y)	-	-	-	-	-	-	-	-	ж	z'	-	-	-	-	-	-	-	-	z'	j	sch	j	
Dentalis																								
21. tenuis - - -	t	त	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	𑀞	t	t	t	
22. „ aspirata - -	th	थ	t,h	t,h	th	t'h	th	th	th	t'	t'	th	th	th	th	th	th	th	th	𑀟	th	th	th	
23. „ assibilata - -	th	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	𑀠	t	t	t	
24. media - - -	d	द	d	d	d	d	d	d	d	d	d	d	d	d	d	d	d	d	d	𑀡	d	d	d	
25. „ aspirata - -	dh	ध	d,h	d,h	dh	d,h	dh	dh	dh	d'	d'	dh	dh	dh	dh	dh	dh	dh	dh	𑀢	dh	dh	dh	
26. „ assibilata - -	dh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
27. tenuissima - -	t'(t)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
28. „ assibilata - -	t'(t)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
29. nasalis - - -	n	न	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	𑀣	n	n	n	
30. semivocalis - -	l	ल	l	l	l	l	l	l	l	l	l	l	l	l	l	l	l	l	l	- - -	- - -	- - -	- - -	
31. „ mollis - - -	l	ळ	-	-	-	-	l	l	- - -	- - -	l	l	l	l	l	l	l	l	l	- - -	- - -	- - -	- - -	
32. flatus asper, 1. -	s	स	f	s	f	f	s	s	s	š	s	s	s	s	s	s	s	s	s	𑀤	s	s	s	
33. „ „ 2. - - -	f	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
34. „ lenis - - -	z	-	-	z	-	-	-	-	-	-	s	z	-	-	-	-	-	-	-	𑀥	z	z	z	
35. „ asperrimus - -	ž	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

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