THE PRINCIPLES
OF THE
INTERNATIONAL PHONETIC ASSOCIATION

being
a description of the International Phonetic Alphabet
and the manner of using it, illustrated by texts in 51
languages

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THE INTERNATIONAL PHONETIC ALPHABET

1. The alphabet of the *Association Phonétique Internationale* is an alphabet on romanic basis designed primarily to meet practical linguistic needs, such as putting on record the phonetic or phonemic structure of languages, furnishing learners of foreign languages with phonetic transcriptions to assist them in acquiring the pronunciation, and working out romanic orthographies for languages written in other systems or for languages hitherto unwritten. Numerous symbols and marks are also provided, by means of which many minute shades of sound may be represented, and which thus render the alphabet well suited for use in scientific investigations, e.g. in dialectology, in the historical study of languages, and in comparative philology.

2. The alphabet is intended particularly for writing connected texts. Consequently, in its construction attention has been paid not only to the appropriateness of each letter from a phonetic point of view, but also to the suitability of letters from the psychological and pedagogical angles and as regards typographical harmony, the needs of the printer and written forms.

3. The construction and use of the International Phonetic Alphabet are guided by the following principles :

(*a*) When two sounds occurring in a given language are employed for distinguishing one word from another, they should whenever possible be represented by two distinct letters without diacritical marks. Ordinary roman letters should be used as far as may be practicable, but recourse must be had to new letters when those of the roman alphabet are inadequate.

(*b*) When two sounds are so near together acoustically that there is no likelihood of their being employed in any language for distinguishing words, they should, as a rule, be represented by the same letter. Separate letters or diacritical marks may, however, be used to distinguish them in " narrow " transcriptions or in scientific investigations.

(*c*) The non-roman letters of the International Phonetic Alphabet have been designed as far as possible to harmonise well with the roman letters. The Association does not recognise makeshift letters ; it recognises only letters which have been carefully cut so as to be in harmony with the other letters. For instance, the Greek letters included in the International Alphabet are cut in roman adaptations. Thus, since the ordinary shape of the Greek letter *β* does not harmonise with roman type, in the International Phonetic Alphabet it is given the form **β**.

And of the two form of Greek theta, θ and ϑ, it has been necessary to choose the first (in vertical form), since the second cannot be made to harmonise with roman letters.

(*d*) It is not possible to dispense entirely with diacritical marks. The *Association Phonétique Internationale* recommends that their use be limited as far as possible to the following cases :

(i) For denoting length, stress, and intonation (see §§ 31–36).

(*ii*) In representing particular members of phonemes.

(iii) When the introduction of a single diacritic obviates the necessity for designing a number of new letters (as, for instance, in the representation of nasalised vowels ; see § 30).

(iv) For representing minute shades of sound in scientific investigations.

(*e*) In applying the alphabet to any particular language, regard should be had to two fundamental phonetic principles : the theory of " phonemes " and the theory of " cardinal sounds " and especially " cardinal vowels ".

PHONEMES

4. The nature of a " phoneme " and the difference between a phoneme and a speech-sound may be illustrated by concrete examples, such as the following taken from various languages. The three **k**-sounds of the English words *keep, cart,* and *cool* can be heard to be different ; one can also easily feel the differences in their manner of formation. Nevertheless, from the linguistic point of view they count as if they were one and the same. We write them phonetically with the same letter **k**, since nothing is to be gained by using separate letters for them. The same applies to the French **k**-sounds in *qui, car, cou,* which differ somewhat from the corresponding English ones. Similarly the sound ŋ counts as being " a kind of **n** " in such languages as Italian, Spanish, Czech, Hungarian, where it occurs only before such consonants as **k**, **g**, or **x**—positions from which ordinary **n** is excluded. (In English and German, however, ŋ is not " a variety of **n** " ; **n** and ŋ are separate phonemes, as is shown by the existence of such pairs of words as *sin* and *sing*.) The " clear l " used by many Southern English people before vowels (as in *leaf, look*) and the " dark l " used before consonants and finally (as in *field, feel, kettle*) likewise constitute a single phoneme. These varieties of l, being determined exclusively by their situation, count as if they were one and the same sound, and they are represented adequately by the single letter **l**. So also with the French ordinary l (as in *là*) and the " breathed " l̥ (used when such a word as *oncle* terminates a

sentence); the sounds are acoustically very different, but as their use is determined by their situation they constitute a single phoneme, and can be represented unambiguously by the letter **h**. The initial sounds of the Japanese words *hito*, *hata*, *Huzi*,[1] differ greatly from each other; the first resembles the German **ç** of *ich*, the second is an ordinary **h**, and the third is a "bi-labial" **f** (**ɸ**). The use of these sounds is, however, entirely conditioned by the following vowels; to a Japanese, **ç** is "the kind of **h**" he uses before **i**, while **ɸ** is the "kind of **h**" he uses before **u**; the three sounds belong therefore to a single phoneme and may be represented by the single letter **h**—as is, indeed, done in modern Japanese romanic orthography.

5. The grouping of vowel sounds into phonemes is illustrated by the following examples. In Danish there are several distinct members of the **a**-phoneme; in particular there is a fairly "forward" one in such a word as *sand* (**san'**) and a "backer" variety in a word like *sang* (**saŋ'**) when a velar consonant follows in the same syllable. In Russian there are many varieties of **a**; a "middle" one is used in **sat** (сад), a very forward one in **pjatj** (пять), a very back one in the first syllable of **'palka** (палка), a somewhat "centralised" one in the second syllable of **xara'ʃo** (хорошо), and a completely central one (**ə**) in the first syllable of the same word. But they all count linguistically as if they were the same sound; they belong to the same phoneme, and may be represented unambiguously in phonetic transcription by the same letter **a**. In writing Pekingese romanically the letter **e** may be used to represent sounds of the **ʌ** or **ə**-types as well as sounds of the **e**-type. These latter occur only next to **i** or **y**, as in the syllables **lie**, **fei**, **ye**, whereas sounds of the **ə** and **ʌ**-types occur exclusively in positions other than these, e.g. in such syllables as **sʌŋ**, **sən**, **fʌ**, **ʒʌ**; if this is understood, these latter syllables can be written unambiguously with the letter **e** (**seŋ**, **sen**, **fe**, **ʒe**).[2]

6. In languages where there are consistent relationships between vowel-length and vowel-quality, two vowel qualities may be considered as belonging to a single phoneme, the quality being conditioned by the length. Thus, in transcribing normal Southern English we may write *feet* and *fit* as **fi:t**, **fit**, using the same letter **i** but with the length-mark in the first word.[3] Similarly, we may write the Dutch words *taak* and *tak* phonetically as **ta:k** and **tak** with the

[1] In old romanisation ***Fuji***.

[2] **e** is in fact the letter employed in such syllables in the system of romanisation known as Gwoyeu Romatzyh (**'kuo,y 'luo,ma'tsə**).

[3] We cannot do this in types of English such as American and Scottish, in which there are no consistent relationships between vowel quality and length.

convention that the long **aː** has a front sound and the short **a** a back one.

7. Phonemes are thus families of related sounds which count linguistically in a given language, as if they were one.

8. When two sounds belong to two separate phonemes in a given language, they may distinguish one word from another in that language, and separate letters must be assigned to them in phonetic transcriptions of it. Thus, **n** and **ŋ** must be represented by separate letters in writing English and German, though such a distinction is not required in transcriptions of Italian, Spanish, or Hungarian. Similarly, two sounds of the **e**-type, **e** and **ɛ**, have to be distinguished in French, Italian, Burmese, and Tswana, though in Spanish and Russian similar sounds occur which do not need to be differentiated in writing. Examples are : French **ne** (*nez*), **nɛ** (*naît*), Italian **venti** (twenty), **vɛnti** (winds), Burmese **ˍne** (remain), **ˍnɛ** (region). On the other hand, though Russian contains a " close " **e** (as in **pjetj**, **петь**, for instance) and an " open " **ɛ** (as in **'ɛtat**, **этот**, for instance), the use of these sounds is conditioned by the phonetic context ; consequently the two vowels do not have to be represented by separate symbols in " broad " transcriptions.

CARDINAL SOUNDS

9. It is not possible to design letters for the representation of all distinguishable shades of sound. Most letters, therefore, not only represent particular sounds but also have to do duty for other shades of sound near to these. Hence the need for establishing systems of " cardinal " sounds. The principle is of particular value in the case of vowels, and is indeed essential for their classification, for their comparison, and for establishing the best methods of representing them in writing.

10. A convenient system of cardinal vowels consists of a series of eight basic vowels of known formation and acoustic qualities, which serve as a standard of measurement, and by reference to which other vowels can be described. The selection of these eight cardinal vowels is based upon the principle that no two of them are so near to each other as to be incapable of distinguishing words. These eight vowels are represented by the letters **i e ɛ a ɑ ɔ o ʊ** Cardinal **i** is the " closest " possible " front " vowel ; if the tongue were in a higher position the sound produced would be a consonant (fricative **j**). Cardinal **ɑ** is the " openest " of the " back " vowels ; if the tongue were retracted further, a fricative consonant of the type **ʁ** would result. Cardinal **e**, **ɛ**, **a** are vowels of the " front " series intermediate between **i** and **ɑ** ; they are selected so that the degrees of acoustic separation **i-e**, **e-ɛ**, **ɛ-a**, **a-ɑ** are

approximately equal. Cardinal ɔ, o, u are vowels of the "back" series continuing the same scale of equal degrees of acoustic separation.

11. The positions of the tongue in the articulation of cardinal i, a, ɑ and u have been determined by X-ray photographs.[1] When the highest parts of the tongue are marked with dots in these photographs, they have been found to have the positional relationships shown in Fig. 1.

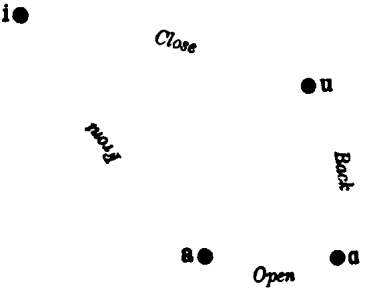

FIG. 1

12. The tongue positions of e and ɛ are intermediate between those of i and a, and the tongue positions of ɔ and o are intermediate between those of ɑ and u. For practical linguistic purposes we can thus establish a "vowel figure" of the type shown in Fig. 2, which can be used for describing vowels which differ from these cardinal sounds. For instance, a dot placed on the figure half-way between the dots representing e and ɛ will denote a vowel sound half-way in acoustic quality between cardinal e and cardinal ɛ.

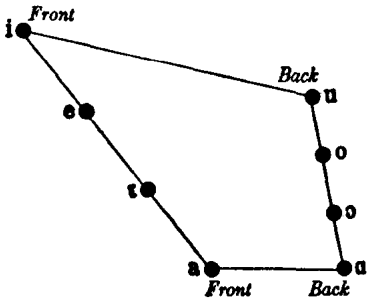

FIG. 2

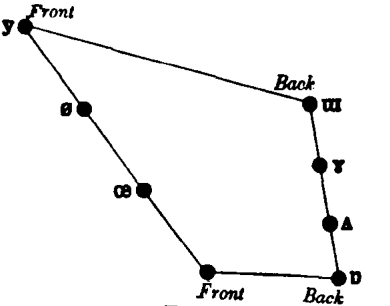

FIG. 3

[1] The original photographs may be seen in the Department of Phonetics, University College, London. Small scale reproductions are given in the frontispiece to *The Pronunciation of English* by D. Jones (new edition, Cambridge University Press). Larger reproductions of the X-ray photographs of cardinal i, ɑ and u were published in the Proceedings of the Royal Institution, Vol. XXII, pp. 12, 13 (1919).

13. **Secondary Cardinal Vowels.** In the articulation of the above-mentioned eight cardinal vowels the lips are in the positions which most commonly accompany the tongue positions. Thus, i, e, ɛ, a and ɑ have "spread" or "neutral" lip articulations, while ɔ, o and u are formed with different degrees of "lip-rounding". A set of secondary cardinal vowels consists of vowels having the same tongue positions but different lip positions. In the alphabet of the *Association Phonétique Internationale* these are denoted by the letters y, ø, œ, —, ɒ, ʌ, ɤ, ɯ. They are arranged on the vowel figure in the same manner as the primary cardinal vowels, i.e. as shown in Fig. 3.

14. Cardinal y and ø have the tongue positions of cardinal i and e combined with "close" lip-rounding. Cardinal œ has the tongue position of cardinal ɛ combined with "open" lip-rounding. Cardinal ɒ has the tongue position of cardinal ɑ combined with "open" lip-rounding. Cardinal ʌ, ɤ, ɯ have the tongue positions of cardinal ɔ, o, u combined with lip-spreading. No symbol has been

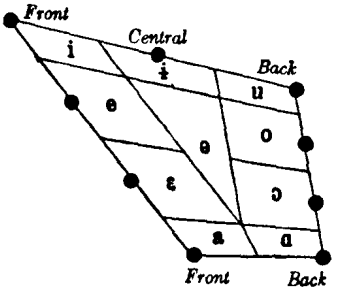

FIG. 4

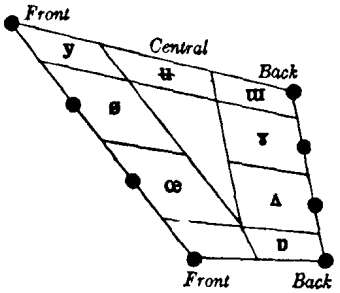

FIG. 5

adopted for a vowel having the tongue position of cardinal a combined with lip-rounding, since this sound has not as yet been found to occur in any language as a phoneme separate from œ.

15. It is convenient to fix two other cardinal vowels with tongue positions intermediate between those of i and u. They are denoted by ɨ and ʉ, ɨ having spread lips and ʉ rounded lips.

16. **Central Vowels.** Vowels situated on the line i-a or near to it are the "front" vowels, so-called on account of their manner of formation by the tongue; those situated on the line ɑ-u or slightly in advance of it are the "back" vowels. As the distance between i and u (in terms of tongue position) is much greater than the distance between a and ɑ, it will be seen from Fig. 4 that there is an area roughly triangular in shape which separates the front and back

series of vowels. Vowels formed with the highest part of the tongue in this triangular area are called "central" vowels.

PRINCIPLES OF VOWEL REPRESENTATION

17. The *Association Phonétique Internationale* recommends that in transcribing any particular language the letters i e ɛ a ɑ ɔ o u, y ø œ ɒ ʌ ɤ ɯ, ɨ ʉ be used, as far as may be practicable, to denote vowels situated in the various areas shown in Figs. 4 and 5. This general recommendation is, however, subject to considerations mentioned in §§ 19–21.

18. The Association also recommends that the letter ə be employed to denote any unrounded vowel situated in the interior triangle (see Fig. 4). If a language contains two unrounded central vowels, it is recommended that ə be used to denote the closer one and ɐ for the opener one. Occasionally the form ɜ may be employed to represent another variety of central vowel.

19. In broad transcriptions the different members of a vowel phoneme should all be represented by the same letter, notwithstanding that the sounds may be situated in different cardinal areas. For instance, although the Russian e-phoneme includes sounds in the cardinal areas marked e and ɛ in Fig. 4, nevertheless the single letter e is adequate for representing the sounds in broad transcription.

20. When a vowel is situated in an area designated by a non-roman letter, it is recommended that the nearest appropriate roman letter be substituted for it in ordinary broad transcriptions if that letter is not needed for any other purpose. For instance, if a language contains an ɛ but no e, it is recommended that the letter e be used to represent it. This is the case, for instance, in Japanese. Similarly, in broad transcriptions of Southern British English the vowels in *coat, caught, cot* may all be written with the same letter o, thus ou, o:, o, although the two latter sounds are in the ɔ and ɒ areas. (In a slightly narrow transcription they might be written ou, ɔ:, ɔ, in a still narrower one öu, ɔ:, ɒ.)

21. As sounds of the ɒ type have considerable acoustic similarity to those in the ɔ and ɑ areas, it is generally advisable to represent them by one of these more familiar symbols, or in some cases by one of the ordinary roman letters o or a. For instance, in transcribing Southern British English the ɒ-sound in *hot* may be written ɔ (or in broad transcriptions o) without a length-mark, while in transcribing Hungarian it may be written ɑ (or in broad transcription a) without a length-mark.

22. Sometimes it is necessary to use special letters to represent

vowel sounds situated on or near the limits of the cardinal areas. The letter ɪ is used, when needful, to denote a vowel situated near the meeting-point of the areas i-e-i̯, and ɷ for a lip-rounded vowel near the meeting-point of the areas u-o-i̯.[1] ʏ may be used to denote a lip-rounded ɪ. æ may be used when it is desired to represent by a separate letter a vowel intermediate between cardinal ɛ and a. It is recommended that the use of these additional letters should be as far as possible limited to languages in which the sounds in question occur as phonemes separate from sounds appropriately represented by adjoining cardinal symbols. It is, for instance, necessary to make use of the letter ɪ in transcribing Scottish English or General American, since in both those types of English the sound occurs as a phoneme distinct from i and e.[2]

23. Occasionally there is need for a symbol to represent a vowel intermediate between o and ɔ. The letter ɵ is recommended for this purpose.

ILLUSTRATIONS OF THE VOWEL SYMBOLS

24. The vowel symbols are, as explained above (§ 17 ff.), necessarily elastic in their values. It is to be observed also that in many cases the pronunciation of the key words varies from one native speaker to another.

i. As in Fr. *si*; Ger. *wie*. With value more remote from cardinal in Eng. *see*.

e. As in Scottish pronunciation of *day*; Fr. *thé*; Ger. *mehr*; Ital. *pesca* (fishing); Russian петь.

ɛ. As in Northern Eng. pronunciation of *pen*, *get*; Fr. *mettre* (short), *maître* (long); Ger. *Bett*; Ital. *pesca* (peach), *era*; Russian э in этот.

a. As in Northern Eng. pronunciation of *back*, *pan*; Parisian Fr. *patte*; Hanoverian Ger. *fahren*, *Strasse*; Russian vowel in мясо.

ɑ. As in frequent Southern Eng. pronunciation of *far*, *half*; Parisian Fr. *pas* (short), *pâle* (long); Ger. *fahren*, *Strasse* as pronounced in Hamburg and in Saxony; first a in Russian палка.

ɔ. As in Scottish pronunciation

[1] The letters I and ʊ may be used as alternatives to ɪ and ɷ. ɪ and ɷ are, however, preferable forms, the others being unsatisfactory in italic and sanserif founts of type.

[2] This is because in Scottish English the traditionally long i is generally pronounced quite short, while in General American the traditionally short i (ɪ) is often lengthened.

of *hot*; Fr. *porte* (short), *fort* (long); Ger. *Sonne*. Opener variety in Ital. *cosa*.

o. As in Scottish pronunciation of *coat*; Fr. *beau*; Ger. *wohl*; Ital. *dove*.

u. As in Fr. *tout*; Ger. *gut* Ital. *subito*. With value more remote from cardinal in Eng. *too*.

y. As in Fr. *lune*; Ger. *über*; Norweg. *tjue* (cardinal).

ø. As in Fr. *peu*; Ger. *schön*.

œ. As in Fr. *œuf* (short), *veuve* (long); Ger. *zwölf*.

ɒ. As in Southern Eng. *hot* (generally better written with o or ɔ, see § 20).

ʌ. As in frequent Northern Eng. and American pronunciation of *cup*; advanced varieties of ʌ are used in Southern Eng.

ɤ. As in Shan ˈkɤ (salt); advanced variety used in Marathi mɤg (afterwards).

ɯ. As in Shan ˉmɯ (hand).

ɨ. Russian ы in сын.

ʉ. As in Norweg. *hus*; frequent pronunciation of *oo* in Scotland.

ɪ. As in Eng. *bit*; Ger. *bitte*. Can often be written with i, see § 6.

ʊ. As in Southern Eng. *book*; Ger. *Hund*. Can often be written with u, see § 6.

ʏ. As in Ger. *fünf, Glück*. Can generally be written with y in broad transcriptions.

æ. Common Southern Eng. variety of "short a" as in *cat*; Russian а in пять. Can generally be written with a or sometimes with ɛ.

ɐ. As in Swedish *dum*, also written ö, § 30.

ə. As *a* in Eng. *about* ("neutral vowel" or "schwa"); other varieties are Fr. "*e* mute", Ger. *e* in *bitte*.

ɐ. As *a* in a common pronunciation of Eng. *sofa*; Lisbon Portuguese *a* in *para*.

25. The principal consonant letters of the *Association Phonétique Internationale* are set out together with the chief vowel letters in the following chart. Sounds with double articulation appear twice in the chart, secondary articulations being shown by the symbols in brackets.

Consonants	Bilabial.	Labiodental.	Dental and Alveolar.	Retroflex.	Palato-alveolar.	Alveolo-palatal.	Palatal.	Velar.	Uvular.	Pharyngal.	Glottal.
Plosive	p b		t d	ʈ ɖ			c ɟ	k g	q ɢ		ʔ
Nasal	m	ɱ	n	ɳ			ɲ	ŋ	ɴ		
Lateral			l	ɭ			ʎ				
„ fricative			ɬ ɮ								
Rolled			r						ʀ		
Flapped			ɾ	ɽ					ʀ		
Rolled fricative			ɾ̝								
Fricative	ɸ β	f v	θ ð | s z | ɹ	ʂ ʐ	ʃ ʒ	ɕ ʑ	ç j	x ɣ	χ ʁ	ħ ʕ	h ɦ
Frictionless Continuants and Semi-vowels	w | ɥ	ʋ	ɹ				j (ɥ)	(w) ɣ	ʁ		

Vowels	Rounded	Front	Centr.	Back
Close	(y ʉ u)	i y	ɨ ʉ	ɯ u
Half-close	(ø o)	e ø	ə	ɤ o
Half-open	(œ ɔ)	ɛ œ	ɐ	ʌ ɔ
		æ		
Open	(ɒ)	a		ɑ ɒ

ILLUSTRATIONS OF THE CONSONANT SYMBOLS

26. **p, b, t, d, k, m, n, l, f** and **h** have their common European values. The values of the other letters are exemplified in the following list.

g. As in Eng. *get.*

j. Eng. *y* in *yet, you*; *j* as in Ger. *Jahr.*

r. Rolled **r** as in Scottish English, Italian, Spanish, Russian. The letter is also used whenever possible to denote flapped **r** (ɾ), fricative **r** (ɹ), lingual frictionless continuant **r** (ɻ), uvular rolled **r** (ʀ), uvular fricative **r** (ʁ) or the uvular frictionless continuant (ʁ). See § 27 (*e*), (*f*).

s. As in Eng. *see*, Fr. *son*, etc.

v. As *v* in Eng., Fr., Ital.; Ger. *w*; Russ. в.

w. As in Eng. *will, walk*; Fr. *ou* in *ouate.*

z. As in Eng. *zeal*, Fr. *zèle.* Russ. з.

ʈ. Hindi ट (*ṭ*); Swedish *rt* in *kort.*

ɖ. Hindi ड (*ḍ*); Swedish *rd* in *bord.*

c. Cardinal value, as in dialectal Fr. pronunciation of *quai* (ce); Hung. *ty* in *kutya*; Persian *k* in *yak* (one). See also § 29 (*a*).

ɟ. Cardinal value, as in dialectal Fr. pronunciation of *guêpe* (ɟɛːp); Hung. *gy* in *nagy.* See also § 29 (*a*).

q. Arabic ق; Eskimo ĸ.

ɑ. The corresponding voiced sound. One value of Persian ق.

ʔ. As in North Ger. *Verein* (fɛrʔain). Arabic hamza.

ɱ. Ital. *n* in *invidia*; Span. *n* in *anfora.* See § 27 (*a*).

ɳ. Marathi ण (*ṇ*).

ɲ. Fr. and Ital. *gn*; Span. *ñ.*

ŋ, Eng. *ng* in *sing*; Ger. *ng* in *Ding*; Span. *n* in *cinco, tengo*, etc.

ɴ. As in Eskimo **eɴina** (melody).

ɬ. Eng. *l* in *table*; Russian л; one variety of Polish *ł.*

ɮ. Welsh *ll* as in *Llangollen*; Kaffir *hl* as in *hlamba* (wash).

ɧ. Zulu *dhl* as in *dhla* (eat).

ɭ. Marathi ळ (*ḷ*).

ʎ. Ital. *gl* in *egli, gli* in *voglio*; Span. *ll* in *allá*; Greek λι in ἥλιος.

ɽ. Czech *ř.*

ɾ. Span. *r* in *pero.*

ɽ. Retroflex flap, starting with retroflexed tongue and moving the tip forwards and downwards so that the under side strikes the teeth-ridge. Hindi ड़ (*ṛ*); the "thick *l*" as in the Eastern Norwegian pronunciation of *Ola.*

ʁ. One variety of Parisian Fr. **r.** See § 27 (*d*), (*e*).

ɸ. Frequent Ger. pronunciation of *w* in *Schwester*; Tswana *f*; Japanese *h* before *u* as in *Huzi* (*Fuji*).

β. Span. *b* as in *saber*; Middle Ger. *w*.
θ. Eng. *th* in *thing*; Span. *c*, *z* in *placer*, *plaza*; Greek *θ*.
ð. Eng. *th* in *this*; Span. *d* in *cada*; Danish *d* in *gade*; Greek *δ*.
ɹ. Southern Eng. *r* in *dry* (consonantal); Amer. Eng. *ir* in *bird* (vocalic). See §§ 27 (*e*), 29 (*f*).
ʂ. Marathi ष (*ṣ*); Pekingese variety of ʃ before vowels other than i; Swed. *rs* in *tvärs*.
ʐ Pekingese variety of ʒ, as in 'ʒen (man) (narrowly 'ʐən). See § 27 (*j*).
ʃ. Eng. *sh*; Fr. *ch*; Ger. *sch*; Russian ш; Ital. *sc* in *pesce*, *sci* in *uscio*.
ʒ. Eng. *s* in *measure*; Fr. *j* in *jour*, *g* in *géant*; *ll* in South American Spanish; Russian ж.
ç. In occasional pronunciation of Eng. *hue* (çu:); Ger. *ch* in *ich*; Japanese *h* before *i* as in *hito*.
ɕ. Polish *ś* in *gęś*, *si* in *gęsią*; Pekingese variety of ʃ before i (*hs* in the Wade romanisation).
ʑ. Polish *ź* in *źle*, *zi* in *ziarno*.
x. Scottish *ch* in *loch*; Ger. *ch* in *ach*; Span. *j* in *jabón*, *g* in *gente*; Russian х.
ɣ. Span. *g* in *luego*; Danish *g* in *koge*; freq. Ger. pronunciation of *g* in *Wagen*; Greek *γ*; Arabic غ.
χ. Variety of Arabic خ.
ħ. Arabic ح.
ʁ. Variety of Parisian *r*; variety of Arabic غ. See § 27 (*e*).
ʕ. Arabic ع.
ɦ. Voiced h. Often heard in Eng. between voiced sounds, as in *behave*, *manhood*. Arabic ه. See § 27 (*h*).
ɥ. Fr. non-syllabic *u*, as in *nuit*.
ʋ. Dutch *w*; Hindi व.

REMARKS ON THE LETTERS IN THE CHART OF CONSONANTS

27. In connexion with the consonant letters included in the chart on p. 13 it is recommended that the following principles be observed:

(*a*) As with vowels (§ 20), it is desirable to substitute more familiar consonant letters for less familiar ones, when such a substitution can be made without causing ambiguity. For instance, in a language containing a retroflex ʈ but no dental t the sound could generally be denoted by t. And in a language such as Tswana, which contains ɸ but not labio-dental f, the letter f may be used to denote the sound. So also, as the sound ŋ is not known to occur otherwise than as a member of the m-phoneme, it can,

as a rule, be written with m (with the appropriate convention). Several other examples are given below.

(*b*) The letter ɹ is employed to denote both fricative r and the r-like frictionless continuant, since the two sounds have not been found to exist as separate phonemes in any language. When the latter sound occurs both consonantally and syllabically (as a vowel) in the same language, the two uses may be distinguished by the letters r and ɹ respectively.

(*c*) The letter j is employed to denote both the fricative and frictionless sounds, since the two varieties have not been found to exist as separate phonemes in any language. The same applies to ɣ and ʁ.

(*d*) The letter ʀ may denote the fully rolled sound with two or more flaps of the uvula or the single-flap sound. In a language containing the two sounds as separate phonemes, the notation ʀʀ is recommended for the fully rolled sound.

(*e*) The letter r may, when convenient, replace ɹ, ʀ or ʁ in the transcription of a language containing one of these three sounds but not a rolled lingual r.

(*f*) The flapped sound ɾ can generally be represented by r. In a language such as Spanish, where the single flap and the fully rolled sound occur as separate phonemes, the notation rr is recommended for the fully rolled sound.

(*g*) In accordance with the principle enunciated in (*a*) above, the sound χ can generally be represented by the letter x. This cannot, however, be done in such languages as Eskimo or Kabardian, where the velar and uvular sounds occur as separate phonemes.

(*h*) Similarly, voiced h can generally be denoted by the letter h instead of the special symbol ɦ.

(*i*) The letters ɲ, ʎ may be used to denote the cardinal palatal sounds (i.e. those corresponding exactly to i and j) or to acoustically indistinguishable sounds with more alveolar articulation (i.e. corresponding to ɕ, ʑ).

(*j*) The more familiar letters ʃ, ʒ may be used to denote the sounds ʂ, ʐ in languages like Pekingese, which contain these sounds and do not contain the more usual varieties of ʃ, ʒ. The letters ʃ, ʒ may also be used to denote palatalised varieties of ʃ, ʒ when these do not occur as phonemes separate from non-palatalised ʃ, ʒ.

OTHER LETTERS

28. Palatalised consonants, as in Russian: ʈ, ɖ, ɳ, etc. (see § 29 (*i*)). Special forms for palatalised ʃ, ʒ (for use when

these occur as phonemes separate from non-palatalised ʃ, ʒ): ʃʲ, ʒʲ.

Advanced velar consonants, as in Russian : k̟, x̟. When, as in narrow transcription of Russian, separate letters are needed to denote ordinary g and advanced g̟, it is recommended that the form g be used for the ordinary sound and the form g̟ (or preferably ɡ) for the advanced one. (See, however, § 29 (*i*).)

Velarized ("dark") l : ɫ.

Other velarized consonants : tˠ, dˠ, sˠ, zˠ, etc. These symbols may also be used to denote the pharyngalised sounds (the Arabic "emphatic" consonants).

Ejective consonants (sounds pronounced with simultaneous or nearly simultaneous glottal stop) : p', t', k', ts', etc. See also § 30.

Voiced implosives, as in Sindhi and Bantu languages, ɓ, ɗ, etc.

Labialized θ, ð or s, z : σ, ϱ (ʂ ʐ, of the orthography for Shona recommended by Professor Doke). One may, however, represent these sounds by digraphs such as sf, zv or sɥ, zɥ, in accordance with the principles enunciated in § 29 (see particularly § 29 (*j*)).

Labialized ʃ, ʒ or ç, j : ɧ, ʑ (as *hw* and *w* before *i*, *e*, *ɛ* in the Twi language of the Gold Coast). See, however, § 29 (*h*).

Sound intermediate between d and l, but distinct from ɭ : ɺ.

Clicks : dental ǂ (Zulu *c*), lateral ǁ (Zulu *x*), retroflex ǃ (Zulu *q*), velar ʞ.

r-coloured vowels (formed by retroflex tongue or otherwise) : ɚ, ɛ˞, a˞, ɐ˞, ə˞, etc. ə˞ is another way of writing frictionless ɹ when used as a vowel.

Combination of x and ʃ (one variety of Swedish *tj*, *kj*, etc.) : ɧ.

Japanese syllabic nasal : ɲ.

The letter for the voiceless fricative corresponding to w is ʍ, but it is generally preferable to represent this sound by the digraph hw.

DIGRAPHS

29. In order to keep the number of letters in the phonetic alphabet within reasonable limits, the *Association Phonétique Internationale* recommends the occasional use of digraphs, i.e. sequences of two letters to represent single sounds. The following are the chief cases in which digraphs may be employed with advantage :

(*a*) To represent affricate consonants, e.g. pf, bv, ts, dz, tʃ, dʒ, tɕ, kx. If a language contains affricates as well as such sequences

as t + s, t + ʃ, the affricates may be denoted by ligature forms such as ʦ, ʣ, ʧ, ʤ, or by the use of a linking mark ‿ or ⁀, thus ts, tʃ, etc., or t͡s, t͡ʃ, etc. Another plan is to retain the notation t͡s, d͡z, tʃ, etc., for the affricates, and to insert a hyphen (t-s, d-z, t-ʃ, etc.) when the t and s, d and z, t and ʃ, etc., are separately pronounced. This latter system is convenient for the transcription of such a language as English, where the affricate tʃ is common and the sequence t + ʃ is rare. It is often desirable (e.g. in the representation of Indian languages) to represent the affricates tʃ and dʒ by single letters; the letters c and ɟ may generally be used for this purpose. Occasionally the affricates ts, dz also need representation by single letters; the special symbols ʒ and ƨ are recommended for use in such cases. (In a language such as Marathi, which contains affricate dz but no z, the letter z may be used in place of ƨ in accordance with the principle in § 27 (*a*).) Doubled affricates may be represented thus ttʃ, tts, etc. (except in languages where dental t may be followed by affricate tʃ, etc.), or thus cc, ʒʒ, etc.

(*b*) To represent aspirated consonants, when these have to be distinguished from corresponding "non-aspirated" sounds. Aspirated consonants may be represented thus, ph, th, etc.

(*c*) To represent the "aspirated s" of Burmese, Shan, Korean, etc., which may be adequately rendered by sh.

(*d*) To represent laterally exploded t and d (as in Bantu languages); these may, without ambiguity, be represented by tl, dl.

(*e*) To represent voiceless nasal consonants, when these occur as separate phonemes; they may be written hm, hn, hɲ, hŋ.

(*f*) To represent "r-coloured" vowels, i.e. vowels pronounced with retroflex modification or with other types of tongue retraction producing a similar acoustic effect. These sounds may be represented by vowel letters followed by ɹ, thus aɹ, ɔɹ, uɹ. The ɹ may sometimes be replaced by r in accordance with the principle in § 27 (*a*). r-coloured ə may be rendered by əɹ or simply by ɹ (or when convenient ər or r). For another method of representing these sounds see end of § 28.

(*g*) To represent various consonants with double articulation, such as the labio-velars of West Africa which may be written kp, gb, ŋm.

(*h*) To represent consonants with simultaneous w articulation; these may be represented by kw, tw, ŋw, etc. ʃw would be another way of writing ʅ (§ 28). kw, tw, etc., may also be written k̲, t̲, etc. (§ 30).

(*i*) To represent palatalised consonants in languages containing palatalised as well as non-palatalised consonants. This may be done by adding **j**, thus **tj**, **sj**, etc. (which = **ʧ**, **ʃ**, etc., § 28). When a **j** follows a palatalised consonant, as sometimes happens in Russian, the sequences may be written **tjj**, **sjj**, etc. When a sequence composed of a non-palatalised consonant + **j** occurs in such a language, a hyphen may be inserted to show this, e.g. **l-j**, **s-j**.

(*j*) To represent "front labialisation" (palatalisation with lip-rounding); this may be shown by adding **ɥ**, e.g. **bɥ** as in Pedi **bɥale** (now).

(*k*) To represent nasalised vowels; for instance it may sometimes be found convenient (especially in phonetic orthography) to write **aŋ** or **aɳ**, **ɛŋ** or **ɛɳ**, in place of **ã**, **ɛ̃**, etc.

(*l*) To represent vowels pronounced with "breathy voice" (**h**-coloured vowels); this may be indicated by adding **h**, thus **eh**, **ah**, etc. Another method of denoting **h**-coloured vowels is to superpose the aspiration sign, thus **e̓**, **a̓**, etc.

DIACRITICAL MARKS

30. The following diacritical marks are recommended for use when necessary.

˜ nasalisation: **ã**, **ɛ̃** = nasalised **a**, **ɛ**.

˳ breath: **r̥** = breathed **r**; **b̥**, **d̥**, **g̥** are weak voiceless plosives ("mediæ").

˯ voice: for instance **s̬** may be used to represent **z** in languages such as Spanish, in which **z** only occurs incidentally as a member of the **s**-phoneme.

¨ central vowel: **ï** = **i̽**. **ü** = **u̽**. **ë** is intermediate between **e** and **ɤ**. **ö** = **e̽** (intermediate between **ø** and **o**), etc. The use of ¨ is to be recommended when the vowels are special members of back or front vowel phonemes.

. (below a letter) denotes a close variety: **ẹ** = a specially close variety of **e**. This may also be indicated by the mark ˕ placed after or under the letter, thus **e˕** or **e̩**.

˓ open variety: **ẹ** = a specially open variety of **e**. This may also be indicated by the mark ˔ placed after or under the letter, thus **e˔** or **e̞**.

˖ advanced variety. The mark may be placed either after or under the letter; thus an advanced variety of **ɑ** may be represented by **ɑ˖** or **ɑ̟**, an advanced **k** by **k˖** or **k̟** (another way of writing **ḵ**).