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## ARTICLE VI.

OF THE NATURE AND KINDS OF THE SOUNDS OF SPEECH  
AS A PHYSIOLOGICAL BASIS FOR GRAMMAR.

Translated from the German of Hupfeld by Prof. George B. Bliss, University of Lewisburg, Pa.

§ 1. *Mechanism of the Organs of Speech.*

HUMAN speech, as an outward phenomenon (apart from the operations of the mind which give rise to it), is a mechanical function of certain corporeal organs. Its sounds belong in general to that class which are produced by the passage of a current of air through an orifice or a hollow body. They arise from the passage of the *breath* out of the lungs through the *throat* and *mouth*. The first of these, therefore, is in a manner, the *matter* of which speaking sounds are formed (the real principle), the two latter the *instruments* or *organs* by which they are executed (the formal principle). These latter, which first require our more particular attention, together form a *passage* corresponding in structure throughout to that of a wind instrument, the throat and cavity of the mouth respectively to the mouth-piece and tube. In each of the two parts, again, distinct sections must be discriminated, each having its special functions.

1. The *throat* or rather the *larynx* (the upper end of the throat or trachea, with the rest of which we are not concerned) is a hollow vessel consisting of several cartilages, in which we note the following parts. (1) In the middle, a lengthened, narrow aperture or cleft, the *glottis*, whose lower orifice communicates with the trachea, its upper with the mouth. This is that, properly, which answers to the mouth-piece in the wind instrument. (2) On the inner edges of the glottis, two tense elastic ligaments, the *voice-bands* or *glottis-bands* (whose vibrations accompany the voice). (3) Over the glottis, an upright, flexible and somewhat oval-shaped cartilage, the *lid of the glottis* or epiglottis which rests its outer convex surface against the tongue, while the inner concave side faces the glottis so that in swallowing it is bent over by the tongue and covers it.<sup>1</sup>

2. The *mouth* presents a more complex mechanism in which *two*

<sup>1</sup> Comp. Liskovius, *Theorie der Stimme*. Leips. 1814 (with plates). S. 9—16.

organs always unite in one function. Chief parts to be noticed are, *within*, the *cavity of the mouth* and its parallel the *tongue*, that the *passive*, this the *active member*; *without*, the *mouth-flaps* or lips which open and shut the mouth. More minutely, we distinguish, proceeding forward, the following places or pairs of organs. (1) The *root of the tongue* (βάσις τῆς γλώσσης) on one side, and on the other the *epiglottis* together with the *fauces* (palate, velumpalati) against which it leans. (2) The *back of the tongue* (its upper surface) and the *roof of the mouth*. (3) The *tip of the tongue* and the *upper row of teeth* or the gum lying above them. (4) The *two rows of teeth* which like palisades [ἔρκος ὀδόντων] enclose the mouth. Finally, (5) The lips covering the two rows of teeth, as the folding doors of the mouth. Of these (2) (4) are secondary to (1) (3) leaving three chief organs, the root of the tongue, its tip (with the corresponding parts of the roof of the mouth) and the lips. Besides these the *nostrils* must be taken into account as side-passages and sounding-board of the mouth.

REMARK. While the oral cavity corresponds in general, as was said, to the tube of the wind instrument, both in structure and design (viz. the carrying forward and resonance of the tones, § 8), the *active member* in the former, the *tongue* distinguishes it from all artificial instruments of sound, which have merely passive cavities, and gives occasion to the characteristic peculiarity of human speech.<sup>1</sup>

3. The instruments just described, throat and mouth, may be either *passive* or *active* with reference to the air streaming through them. The former, when they offer it a free course, serving merely as a channel; the latter, when they present some hindrance to its passage. The throat, however, can oppose such hindrance only in a passive manner, by contracting the glottis so that the breath must pass with a degree of force; the mouth, on the contrary, does this actively whenever its coupled organs meet and intercept the breath. Only the mouth, therefore, is capable of a proper activity, the throat of a barely passive effort, and hence we may call this the *feminine*, that the *masculine* organ of speech, designations which will be illustrated by our consideration of the sounds.

## § 2. Division and Classification of Speaking-sounds.

Whenever the instruments which we have described become active during the passage of the breath, speaking-sounds are produced, or

<sup>1</sup> Hence, perhaps, in many languages, named from the tongue (ἰνῆ, γλώσσα, lingua, langue, etc.).

the elements of human speech. These fall at once into two chief classes, having reference to the two main organs or passage-points of the breath, the throat and mouth. Thus the more passive the organs, the more undeveloped and imperfect the sound; and the greater their activity and coöperation, the more complete and thoroughly organized is the sound. In regard to this three cases are possible. The organs may be either both *passive*, or *one active and the other passive*, or *both active*. In the *first* case, when both throat and mouth continue passive, i. e. stand open in such a way that the air can pass without meeting resistance anywhere, there arises a perceptible *breathing*. This is the lowest step in the formation of sound, not properly a sound as yet, but only the preparation, the attempt at a sound; still it was embraced in the original alphabet as a proper element of speech, and furnished according to the degree of its strength with a twofold sign, the weaker of which in later alphabets is lost. In the *second* case, when one of the organs becomes active, i. e. offers some resistance to the breath, we first obtain tangible elements of speech. If it is the *throat* which exerts itself by contracting the glottis so that the breath in passing is first forcibly compressed, and then, expanding in the open cavity of the mouth, is made to vibrate in all its parts, there arises a clear *voice* or *tone*, falling distinctly on the ear, commonly called a *voice-sound* or vowel (*vocalis*). If, on the other hand, the mouth alone is active, while some pair of the organs mentioned § 1 meet together and intercept and compress the air issuing from the now quiet (not sounding) throat, i. e. articulate, an obscure sound is formed, which first becomes distinct when joined to one of the former kind, a soft *noise*, most appropriately called *articulation*.<sup>1</sup> Sounds of this sort, being distinctly audible only in connection with vowels, are called *joint-sounds* (*consonantes*), while the vowels, as clear in themselves, are *independent sounds* (*sonantes*). Both stand in the same opposition to each other as the organs and operations by which they are produced (§ 1), and are in a strict sense *elements* (*elementa* as the letters are called in Latin), i. e. the primary matter of speech. The vowels are the *feminine*, i. e. material, positive, the consonants the *masculine*, i. e. formal, negative element, as it regards not only the sonorousness, but also their grammatical and etymological character. The vowels render speech clear and sonorous, while the consonants limit and give support to the tones which would otherwise flow away in an endless, confused succession. Those are the movable,

<sup>1</sup> So Silv. de Sacy, Grammaire, Arab. § 1, who well characterizes the sounds of both kinds.

flowing, these the fixed, combining element; those the light, these the shadow; those the flesh and blood, these the skeleton of the body of speech; those represent more the individual sensation, these more the universal conception; in a word, those give beauty, fulness, life to language, these give it outline, comprehension, strength.<sup>1</sup> It is implied in the very idea of an *element*, that it is of itself only a half-complete speaking sound, requiring the other as its complement. This necessity is met in the *third* case above mentioned, by the *coöperation* of both organs. Here the tone proceeding from the throat is accompanied by a compression of the oral organs (articulation), and so an *articulate tone* is formed in which vowel and consonant blend together and their opposition melts into a higher unit. In this manner first arises an *entire, perfect* (individualized) sound, and the syllable is accordingly to be regarded not as a twofold, but a single organic sound.<sup>2</sup> When several such articulated sounds are combined, through the fusing power of the Accent, into the unity of a conception, a higher vocal-whole is produced, an *articulate word*, in which the syllables form the members and joints (*articuli*). Words, again, link themselves together into a sentence, sentences into periods, etc., and the coherent discourse thus becomes a *membered* body, i. e. a body composed of syllables, words, sentences, etc., united as if by joints. This is the meaning of the appropriate, old designation *articulate discourse*, by which from the *μέγροτες ἀρθρώσεις* of Homer, the peculiarity of human speech as distinguished from the vowel-tones of animals and musical instruments, has been expressed.

### § 3. Of the Vowels.

For the formation of a *vowel* three things are requisite: 1. That *air* should issue from the lungs; 2. that the *glottis* should be so far

<sup>1</sup> Comp. A. W. Schlegel, *Wettsbreit der Sprachen in the Athenäum* 1 B, reprinted in his critical writings 1 B. S. 179 ff. 194 ff. — Böckh in *Daub and Creutzer's Studien* 4 B. S. 376. — The Rabbinists also have much to say of this distinction, which they commonly express by calling the vowels the *soul* (i. e. the movable, living), the consonants the *body* (i. e. the fixed), part of language, a distinction which certainly is more striking in the Semitish than the Japhetish languages.

<sup>2</sup> So it was evidently regarded in the oldest oriental mode of writing, where not separate consonants and vowels, but syllables (of the simplest form, consonants united with the primitive vowel *a*, as *ba, ga, da*, etc.), hence not elements but individual units of sound, are denoted. Comp. the author's *Heb. Gram.*, § 11, 1. And it may now be safely assumed that no original language of either the Semitish or Japhetish stock, exhibits roots consisting of a mere vowel or consonant. Where this appears to be the case, one element is lost.

contracted that the air can only make its way through with a degree of force and vibration; 3. that the resultant tone should be carried forward through the *mouth*, shaped to its appointed form and sent out in front. The *first* of these, the emission of the air, takes place either with a light, scarcely perceptible *pressure* on the epiglottis, or with a stronger *thrust* from the depths of the chest — serving, perhaps, to open a way for the air into the mouth, or it may be only a *sigh*, as it were, occasioned by the exertion necessary to set the throat in action. One or other of these precedes every vowel pronounced with a fresh opening of the mouth, i. e. every vowel commencing a *new* vocal whole, whether word or syllable, and furnishes it a *basis*. When a preceding consonant furnishes this basis, it is therefore *naturally* wanting; and generally in medial sounds it is perceptibly *weakened*, hence easily swallowed up, and in many languages, as the Greek, is here entirely obliterated. This is indicated by the so called *breathing-letters* (breathings, spiritus, hiatus) which appear in the Semitic mode of writing in their integrity, with a twofold power ( $\aleph$  and  $\aleph$ ) and in all parts of the word, in medial and final as well as initial sounds; but which in the later alphabets have suffered detriment in various ways. On the *second* condition above mentioned, the *contraction of the glottis*, and the consequent vibration of the air, depends the *clear sound* [Klang] of the vowels. If the opening is too wide, a mere breathing only is produced, and this under the other conditions of speaking gives rise to the *whisper*, a colorless shadow of loud speech. In the *third* place, finally, the *mouth* though merely passive discharges a twofold function of essential importance: 1. By *carrying forward* the tone originating in the throat to the air without, it gives it resonance and clearness. Without this, led off through the nose, it would amount only to an *obscure*, muttering ( $\mu\upsilon\gamma\epsilon\sigma\sigma$ ) tone. Let the nostrils also be closed, and nothing is heard but a dull, stifled grunt. 2. By means of the different *form of its opening* (expansion or contraction) the mouth occasions the distinction between clear and obscure tones, that is, the *distinction of vowels* in speech, which is here the main subject of our investigations. To direct ourselves aright amid the multitude of different vowels, we must advert to the positions of the mouth in pronouncing them, and distinguish the primary from the secondary positions.

1. When the mouth is opened in such a way that the tongue rests quietly on the lower jaw, and all the other organs likewise lie perfectly still and passive — which we may call its *normal opening* or *normal position* — and therefore the tone from the throat streams

forth freely, without the slightest interference of the organs of the mouth, there arises a *pure throat-tone*, in this view the purest and most original of the vowels, the vowel *a*.<sup>1</sup> It is neither clear nor obscure, but both (somewhat as the light shows no distinction of colors, yet contains in itself the ground of such a distinction), and is therefore not indicated in the original Semitish alphabet and the Dewan-agari, but is added in pronunciation to every letter. It may appropriately be called the *original vowel*. From this its Normal Position the mouth can depart in two ways; either by *expansion* (extension in breadth, diductio, dilatatio) or by *contraction* (constrictio), movements which are attended by an approximation of the related organs. In proportion as the mouth expands in breadth, by which the teeth are disclosed, while the tongue rises in an arch towards the roof of the mouth — the tone becomes *clear*, and gives by degrees *ä, e, etc.* In proportion, on the other hand, as the mouth contracts itself and projects the lips to a point — while the tongue drops its upper surface and retires within the lower jaw — the tone becomes *obscure* and sounds in succession *ä, o, etc.* Let these movements be carried to their extreme limit, and the exerted organs approximate so closely

<sup>1</sup> [It may, possibly, be worth while to observe that in testing the principles of this essay, the reader should drop from his mind the *names* of the letters treated of, and attend simply to their *sound*. And the sound, again, for the most part, particularly in the case of the vowels, is that which is represented by the German, Italian and Spanish (Continental) alphabets as distinguished from the English. What this sound is, or the true enunciation of each letter, as here employed, will best be understood from a careful study of the essay itself, and to this the consonants may safely be left; but a provisional exhibition of the principal vowel-sounds (though of only proximate accuracy) may not be unacceptable.

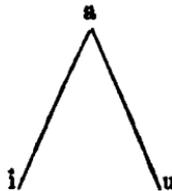
a	pronounced	as	a	in father, ark.
i	"	"	ee	" meet.
u	"	"	oo	" boot.
e	"	"	a	" cake.
o	"	"	o	" bone.
ä	"	somewhat "	e	" help (prolonged).
ø	"	"	Fr. eu	" fleur, (a little like u

in churn,) but made by holding the organs firmly as in pronouncing o, while endeavoring to sound e (long a).

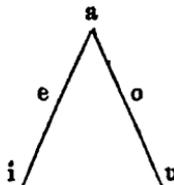
ü	pronounced	as	Fr. u	in vu, made by placing the organs as for u (oo), and then, with only a slight motion of the tongue towards the under teeth, giving out the e sound. (See Sears's edition of Nöhden's German Grammar, p. 37, and Fosdick's Introduction to the French Language, p. 16).
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ai	pronounced	as	ay	in aye (yes).
ei	"	"	i	" fine.
ou	"	"	ou	" found. — Tr.]

that the tone can hardly escape between them, and there arises on the one side, between the tongue and roof of the mouth, the vowel *i*, and on the other, between the two lips, the vowel *u*, that the *clearest* and this the *most obscure* of all the vowels. If the approximation of the organs is pushed so far that an actual contact or articulation takes place, entirely cutting off the tone, these vowels pass over into real consonants, one into *j* or *ch*, the other into *v* or *f*. We can, therefore, call them *semi-consonants* or *consonant vowels* in contradistinction from the pure throat-vowel *a*. We have thus discovered *three landmarks* of the vowel region, *a*, *i*, *u*, the first standing over against the region of the breathing, the other two against that of the consonants; the former being also the point of beginning, the two latter the termination-points of the two series of vowels which are formed by the deviation of the mouth in either direction from its normal position. These two series may be mathematically represented as two lines proceeding from a common point, at whose extremities stand the three vowels, thus :

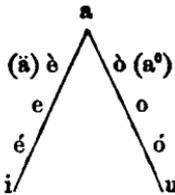


2. Between these three fixed boundary points fluctuate a multitude of *middle-tones*, which, mathematically considered, are as numerous as the conceivable points in the two lines and the whole space which they embrace, and practically are at least as many as the different positions of the mouth will express. If we next designate the intermediate space between *a* and *i*, *a* and *u*, in general, that by *e*, this by *o*, with which the alphabets of most languages are content, the figure will stand thus :

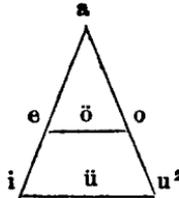


It is obvious, however, that these middle vowels admit of the greatest diversity of pronunciation, two forms of which are specially worthy of

notice; one *broader* (Ital. *suono largo* or *aperto*) and lying nearer the common point *a*, and one *more slender* (Ital. *suono stretto* or *chiuso*) which lies nearer the termination points *i* and *u*. Thus the *e* resolves itself into *è* (*ä*) and *é*, *o* into *ò* (*a°*) and *ó* (if we may employ the customary mark over the French *e* in a somewhat extended application), and the following figure presents itself:

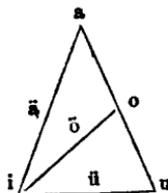


A still further increase of vowels results from the approximation of the *obscure* series *o*, *u* (with the neutral *a*) towards the *clear* vowels by which *clear-obscure*, *mixed tones* are produced, and these are represented on cross lines between the legs of the triangle, and the figure is completed.<sup>1</sup>



3. *Compound or double vowels* (diphthongs) are formed by the *union in one syllable of the throat-vowel a* (as also of its derivatives *e* and *o*)

<sup>1</sup> Comp. Böckh in Daub and Creutzer's Studien, 4, 376—380. — In German they are produced, as may be proved, by the influence of *a* following *i*, and so by actual mixture with a clear element or confusion (hence denominated by Grimm *transformed sounds* (Umlaute). These are mathematically a movement of the obscure points *a*, *o*, *u* towards the clear point *i*, as shown by the following figure:



<sup>2</sup> Vid. on these points, especially the third, Grimm's deutsche Grammm., S. 223 ff., 372 ff.

with the two vowels of the mouth, *i* and *u*; *ai* and *au* (*ei*, *ou*). The possibility of this union of two vowels in one unit of sound depends on the circumstance that the latter in each case is a semi-consonant and made by an (only imperfect) articulation of the mouth. The position of the mouth in producing the guttural vowel here slides into that required by the latter vowels almost as easily as into that of a consonant; it is the simple transition of the mouth from an open to a closed state, performed by a single operation and carrying both sounds, so to speak, on one route. But if the second is also a throat-vowel (*a*, *e*, *o*) demanding a new opening of the mouth and emission of breath, a so-called *hiatus* (i. e. soft breathing) takes place, and the combinations, as *ae*, *ao*, *oe*, *oa*, *eo*, *ea* (= *a'e*, *a'o*, *o'e*, *o'a*, *e'o*, *e'a*) can never melt into diphthongs. And if, conversely, the first is a mouth, the second a throat-vowel, the former, to facilitate the transition or to furnish a support for the following vowel, thrusts in the consonant which lies nearest itself, and is sounded with the lightest contact of the organs, or, in rapid pronunciation, passes quite over into it, and here again no diphthong is heard, thus: *ia*, *ie*, *io*, *iu* = *ija*, *ije*, *ijo*, *iju* or *ja*, *je*, *jo*, *ju*; *ua*, *ue*, *uo*, *ui* = *uva*, *uve*, *uvo*, *uvi* or *va*, *ve*, *vo*, *vi*. Two only among even the regular diphthongs are to be regarded as original and genuine (in an orthoëpical and historical respect), viz. *ai* and *au*, in whose sounds the *difference* (throughout all nature the condition of a complete union) is purest and most extreme. *Ei* and *ou*, whose vowels stand respectively in a less decided opposition to each other, arise out of those two original diphthongs, by a clear or obscure pronunciation of the *a*, and then easily pass over either into *ê* and *ô* or *î* and *û*, — the points of difference being here drawn together so as entirely to coincide. The combinations *oi* and *eu* are real corruptions (from opposite series of vowels, like the mixed-tones *ö*, *ü*) which exist in many languages, and are to be derived partly from *ai*, *au*, partly from the simple vowels *î*, *û*.

4. In taking a general view of the relations of the vowels, it is obvious that three of their number, *a*, *i*, *u* stand preëminent in every respect. (1) By virtue of their *determinate* limited pronunciation, as *fixed* points of the vowel region, (well represented mathematically at the angles of the triangle) they are distinguished *Orthoëpically* from the variable tones which move along the lines. (2) In point of *Euphony*, they have the *purest* and *strongest* sound, the liveliest coloring, as it were, while all the rest appear as middle tints and mixtures. Hence they prove themselves also (3) in a *historical* respect the *most original* vowels, or rather the *original substance* of the entire body of

vowels, whose strong, clear coloring has in the course of time become cloudy, and faded into the adjacent middle tones. From them these latter, *e* and *o*, may be derived in a threefold manner. (1) Most commonly from *a*, when this is pronounced either too *clearly* as *ä*, *e*, or too *obscurely* as *a<sup>o</sup>*, *o*,<sup>1</sup> individual men, as is well known, and whole nations preferring one or the other, to the entire loss of pure *a*; the Arabians, e. g. and the English the former, the Syrians, Rabbins and North Germans the latter. From which it is manifest why the Semitic original alphabet and the Dewanagari had no signs for *e* and *o* more than for *a*, regarding them equally as mere prolongations of the consonant sounds; and on the other hand, with what propriety the Greeks borrowed the characters for *e* and *o* as well as *a*, which were wanting in the Phoenician alphabet from the *gutturals* related to *a*, viz. א, ה, ו. Frequently, however, *e* and *o* originate (2) in *i* and *u*, in which case they have a more slender sound, and were denoted above by *é* and *ó* (as distinguished from *è* and *ò* growing out of *a*); and finally (3) in the diphthongs *ai*, *au*, by crasis or contraction into *ê*, *ô*.— If we inquire after the *efficient causes* and tendencies which have operated to bring about these transformations [Umlautungen] of the original vowels *a*, *i*, *u* into *e* and *o*, we shall discover several; namely (1) *Negligence*, and *convenience* of utterance, by which the sharply defined and extreme positions of the mouth in pronouncing those vowels are flattened and they suffered to drop from the points on which they stand. (2) The *mingling* of different vowel-elements, either mere clouding of the one by the other (Umlautung in a strict sense), or actual fusion (Synalaephe). (3) Influence of neighboring consonants, especially the liquids. To which add still the effect of the Accent, etc.

#### § 4. Of the Consonants.

In the formation of a *consonant* four things are to be considered; first, the *place* in the mouth or *set of organs* by whose action it is

<sup>1</sup> Among the Arabic Grammarians there exists also the *name* for this twofold pronunciation of the *a*, which is in certain cases, a direction for the long *a* (أ) in reading the Koran. They call the clearer ("according to *ي*") an *attenuation* (verdünnung *أَصَالَةٌ*), the more obscure ("according to *و*") a *thickening* or strengthening (*تَعْخِيمٌ*), i. e. emphatic pronunciation, according to Silv. de Sacy). Notices et Extraits des manuscrr. de la Bibl. imp. T. IX. p. 12, 19, 55.

produced (which in the back part of the cavity are commonly designated with reference to the upper or passive member, as this is more easily inspected than the root of the tongue); secondly, the *function* of the organs, or the kind and degree of their compression; thirdly, the effect thus produced on the *air* issuing from the throat; and finally, the resultant *sound*. Here is ground for a fourfold description and classification of the consonants.

1. In considering the place or organs of the mouth, we find, beginning quite back, near the origin of the voice, and proceeding forward, (a) in the extreme back part of the cavity, between the root of the tongue and the epiglottis with the palate (curtain of the palate) the *throat* sounds (gutturales), properly called epiglottis sounds, and the *palate* sounds (usually taken together as gutturals or palatals), *g, k, ch, ng*, the further classification of which is given below. (b) In the middle region of the mouth, between the back of the tongue and the arch above it, the *palatals* (palatinae) in a strict sense, *j, ch, l*. (c) Further forward, between the tip of the tongue and the upper teeth, the *tongue* sounds (linguales), *d, t, th, r, n*. (d) Between the tip of the tongue and the two rows of teeth, the *teeth* sounds (dentales), *z, s, sch*. (e) Between the lips, the *lip* sounds (labiales), *b, p, f, v, m*; to which we may add still (f) the *nasals* or *nose* sounds (*nasales*) *m, n, ng* (standing under a double category). These various sounds may be reduced to three classes, connected with the three principal places of the mouth (§ 1, 2), *posterior*, including the guttural and palatal sounds; *anterior*, the linguals and dentals; and *extreme*, the labials; among which, again, we can distinguish the two former as *interior* (formed within the mouth by the tongue) from the last as *exterior*. Both divisions are essential and important in a physiological or phonetical, as well as a grammatical point of view.

2. The particular sounds of the several organs differ according to the *kind* and the *degree* of the compression (articulation) of the lower, movable and the upper, immovable organ. In reference to the *kind*, this may be either an *elastic*, i. e. *slender* and *hard* pressure (a contact followed by a rebound of the movable organ), by which the channel is entirely closed (only at the three principal places), or a *broad* and *softer* occlusion by which the channel is not so entirely closed as to prevent the air from issuing between the organs. The former is always quick and instantaneous; the latter may be *quick* and vanishing or *protracted*, and in the last case, again, *equable* or *unequable* (rolling, trembling, shaking, etc.). It may, also, hold the channel quite shut, but suffer the air to escape through the nose, thus produc-

ing an intermediate species of articulation between those just named. In reference to the *degrees*, both kinds of articulation may be *weak* or *strong*, to which, in the oriental (Semitish) languages, must be added a *very strong*, which the Western tongues have lost. We have accordingly in the different places of the mouth the following kinds and gradations of articulation and of sounds thereby produced.

1. A thin, hard, elastic pressure of the three principal organs, with a weak, strong, and very strong articulation at each; (a) of the root of the tongue and the palate, weak *g*, strong *k*, very strong *p* (with rolling of the epiglottis, *rasura gulæ*); (b) of the tip of the tongue and the upper teeth, weak *d*, strong *t*, very strong *ṭ*; (c) of the two lips, *b*, *p*, and the Aethiopic *Pait*.

2. A broad, soft occlusion, partly strong, and equally protracted, partly a weak, quick, vanishing, and as it were, confused, contact,<sup>1</sup> (a) of the root of the tongue and the palate, strong *ch*, weak *gh*, and with rolling of the epiglottis, strong *ṭ*, (Arab. *ṭ*, Swiss *ch*), weak *v*, (*ع*), and *v* also, as many pronounce it; more in the central region, between the back of the tongue and the roof of the mouth, a third *ch* and *gh*, with the latter of which *j*, the consonant echo of *i*, coincides; (b) of the tip of the tongue and the upper teeth, (not such as to prevent the air from pressing or gliding through), strong *th*, weak *dh*: of the two rows of teeth with the tip of the tongue drawn back, strong *s*, weak *z*, (*ز*); (c) of the lips, *ph* (*f*) and *bh*, with which *v* coincides. The following are still other degenerate varieties of this articulation, consisting in an unsteady or unequally prolonged occlusion: a rolling motion of the tip, sometimes also of the root, of the tongue (according as the sound is made in the front or back part of the mouth) *v*; a loose application of the back of the tongue, allowing the air to stream over at several unclosed points, *l*; a complete occlusion of the three principal organs (as in 1) but with an emission of the air through the nose, *ng*,<sup>2</sup> *n*, *m*. A general view of these classes is given in the following

<sup>1</sup> For the most part, sounds of the first sort softened by an appulse of the breath (aspiration), and hence indicated, for want of a specific sign, by annexing an *h*.

<sup>2</sup> *n* adulterinum, as Nigid. Figulus calls it, Schneider, latein Elementarl. I. 316.

TABLE.

	Epiglottis.	Palate	Roof of mouth.	Tip of tongue	Teeth.	Lips.
(1) <i>Hard, thin, elastic pressure.</i>						
a. Weak		g		d		b
b. Strong		k		t		p
c. Very strong	ɸ	ɸ		ɸ		ɸ
(2) <i>Soft, broad occlusion.</i>						
a. Weak	ɣ (ع)	gh	gh(j)	dh	z	bh(v)
b. Strong	ɳ (ح)	ch	ch	th	s(sch)	ph(f)
c. Very strong					r	
d. Unequable	(r)		l	r		
(3) <i>Mouth closed, with emission of the air through the nose.</i>		ng		n		m

3. According to the kind and the degrees of strength of the articulation, the air is variously affected.

(1) In the hard, elastic pressure of the organs where the vocal channel is shut, it is *cut off*, (a) by the strong articulation, *sharply* k, t, p, (b) by the weak, *bluntly*, g, d, b, and is either lost in these cases imperceptibly by secret side passages, or conducted in full strength through the nose.

(2) Between the softly closed organs it is *suffered to pass*, (a) in the strong articulation being *crowded* through with violence ɳ, ch, th, s, f; (b) in the weak, gently *gliding* through, ɣ, gh, (j), dh, z, bh, (v); while in the modified form of this articulation [2, (2), (c)], it is crushed through *sch*, rumbles through, l, is rolled through, r.

(3) It escapes *by the nose* unobstructed and in full strength, ng, n, m.

4. On all these conditions, finally, and especially on the affections of the air, depends the *vocality* or *loudness* of the consonants, i. e. the impression which they make upon the ear, as compared with the clear ring of the vowels. In treating of this, we may attend, partly, in general, to the *degree of loudness*, or of approximation to the pure vowel sound [klang], and partly to the particular *kinds and modifications* of the sound.

I. The *degree of loudness* corresponds with the activity of the air, or the freedom and force with which it streams through the mouth; and is inversely as the action of the organs which are exerted to

hinder its passage. The consonants thus fall into two chief classes; *voiceless*, when the air is altogether suppressed, and the tone which accompanies it, stifled; and *semivocal*, when the air not only finds room to pass, but carries with it the tone from the throat. Intermediate between these two, stands a third class, *rustling*, [*rauschende*], when the air makes way for itself between tightly closed organs, but only by force, and with the loss of its tone.

1. When the air is *cut off* by the complete stoppage of the vocal channel at the three principal points (the elastic articulation), nothing is audible but the obscure report of the collision of the organs, something like the sound of a falling key to a musical instrument — a *negative* sound, heard only as it limits a vowel, *voiceless* (*ἀφωνα*, i. e. not loud, entirely deprived of the vowel ring *φωνή*), commonly called *dumb* consonants (*mutæ*),<sup>1</sup> *consonants* in a strict sense. These are seen most pure in the strong articulation where the breath is cut off *sharply*, *k*, *t*, *p*; less pure in the weak articulation with the bluntly intercepted breath, *g*, *d*, *b*.

Just as little is any clear sound produced when, in the soft broad occlusion, the air, after being arrested for an instant, slips through, *gh*, *j*, *dh*, *bh*, (*v*). These are the weakest and most mute of all the consonants, and audible only *before* vowels. *Z* constitutes an exception, of which, more below.

2. When the air, in the soft, broad, yet strong and protracted closure of the organs, *forces itself through* between them, there arises a voiceless, but still quite perceptible reverberating noise — *rustling*, consonants (*strepentes*), *h*, *ch*, *th*, *ph*, (*f*). By the relaxation of this articulation to a weak, vanishing contact through which the air *slips* almost imperceptibly, the sound becomes mute again, as we have just shown.

3. If the soft articulation has become so broad or loose and unsteady, and the occlusion consequently so imperfect, that not only the air can *rush out*, but also the tone of the glottis *obscurely sound through*, *semivocal* or half loud consonants are formed. Here belong the dentals *z*, *s*, *sch*, (originating in the space between the two rows of teeth, when contracted, but not closed by the tip of the tongue);<sup>2</sup> the linguals *l* and *r*; and the nasals (streaming through the open nostrils), *ng*, *n*, *m*. Even the soft mutes mentioned above, *gh*, *j*, *dh*,

<sup>1</sup> The Greek name is better than the Latin, as it expresses the negative character of this consonant-sound, its lack of the proper vowel-sound; for it is not absolutely mute.

<sup>2</sup> As soon as it is closed, the lingual sounds *dh*, *th* are formed.

*dh*, may become vocal, if the weak articulation by which they are made, is so far relaxed as to leave almost no contact of the organs, and allow the vibration of the air to tremble through. There, then, arise undeveloped, (half vowel, half consonant), dull, humming, consonant sounds.

N. B. In the common division of the consonants into mutes and semi-vowels, the rustling sounds given above (under 2), are reckoned in the former class; and this is right, so far as their origin (in the *tenuēs*) and their want of an accompanying throat tone is concerned. But if we regard simply the consonant sound in itself, classes 1 and 2 coincide, for both consist of a reverberating sound altogether similar, in nature and in strength, as distinguished from the abruptly terminated, stifled sound of the mutes proper. Both views harmonise when, as is here done, the consonants in class 2, as *rustling*, are made the transition step between mutes and semi-vowels.

II. A greater variety of classes results when we distinguish the consonants with reference to the different *kinds and modifications of their sound*.

(1) *Hard, thin*, (*tenuēs, exiles*), (*a*) in the strong articulation which sharply terminates the sound — the *tenuēs* in a strict sense, *t, p*; (*b*) in the weak, blunt articulation, the *blunt* consonants (*obtusae*) *g, d, b*, attended in pronunciation with a scarcely perceptible hum, as if united with a nasal tone (almost like *ng, nd, mb*) which is most clearly heard among the French, English, and also many North Germans.

(2) *Soft, full*, when the air is suffered to pass between the lightly closed organs, hence commonly called (with reference to their formation from the *tenuēs*) *aspirates, (breathed upon, adspiratae)*.

(*a*) *Gliding, smooth*, when the air slips smoothly between the organs now scarcely in a state of contact, and half extinguishes again the sound which is on the point of being formed. Between the roof of the tongue and the curtain of the palate, a light *gurgling*, sometimes rough (*cum rasura gulae*) like the oriental *ḡ* (ع), sometimes soft, *gh* (غ, like the German *g* after obscure vowels, e. g. *schlagen, schlügen, flogen*), between the back of the tongue and the roof of the mouth, the still more soft, almost melting *gh*, (like the German *g* after clear vowels, e. g. *mögen, gegen, fliegen, schlügen*) with which *j*, the consonant echo of *i*, coincides: between the tip of the tongue and the upper teeth, the stammering *dh* (like the Eng. *th* in *than, that*, and the *d* between vowels in Low German popular dialects, e. g.

*Fröhhe, Lüdhe for Freude, Leute*); the buzzing  $z$  (i. e. the Oriental, Greek, French, English  $z$ , quite distinct from the strong, double sound of the Germans), which, however, belongs here only as regards its grade of articulation, while as to its vocality it must be reckoned with the sibilants below: between the lips the blowing  $bh$  (as in *labor, aber*), with which  $v$ , the consonant echo of  $u$ , coincides.

(b) *Rustling, echoing*, when the air in the strong and protracted articulation presses violently forth (adspiratae in a strict sense). These are made at the same points as those just named in (a) and correspond with them precisely, except that these are stronger and more sonorous. In the posterior region of the mouth, we have a threefold scraping (hawking) sound  $ch$ ; viz. quite back, with a rolling of the epiglottis the rough oriental  $\text{چ}$  ( $\text{چ}$ ) and the Swiss  $ch$ ; without the rolling of the epiglottis, the milder oriental  $\text{چ}$  ( $\text{چ}$ ) and the German  $ch$  after obscure vowels, as in *Schlacht, Zucht, focht*; and, again, farther forward, more in the middle of the mouth, a still softer, liquid  $ch$ , as in German after clear vowels, e. g. *schlecht, tüchtig, möchte*. In front, near the teeth, is the blunt, hissing (blaesum)  $th$ , and with it also the sharp sibilant  $s$  and  $sch$ , which latter as being more strongly sonorous form a special class. Finally, between the lips, the blowing sound  $ph$  ( $f$ ).

From these two kinds of soft sounds we might separate the oriental  $\text{چ}$ ,  $\text{چ}$ , formed in the extreme back part of the mouth, as constituting, with the very strong tenuis  $p$ , a distinct class—rough consonants (asperae).

(3) *Hissing sounds* (sibilantes), (a) *Smooth* (with the tip of the tongue drawn back) strongly articulated, the whistling  $s$  (Ital.  $s$  *gagliarda*); weakly, the buzzing  $z$  with which the French  $s$  between vowels (Ital.  $s$  *rimessa*) coincides.

(b) *Crushed, sch* (oriental  $\text{ش}$ ,  $\text{ش}$ , when the broad upper surface rather than the tip of the tongue is employed) — strong as in the French  $ch$ , weak as in the French  $j$ ,  $g$ .

To these may be added still *compound* sibilants formed by prefixing a lingual to either the smooth or crushed sibilants, with which it melts into one sound:

(a) With the smooth, strong  $ts$  (German  $z$ , Ital.  $z$  *gagliarda*), weak  $ds$  (Ital.  $z$  *rimessa*).

(b) With the crushed, strong  $tseh$  (Ital.  $o$  *schacciata*, Eng.  $ch$ ), weak  $dseh$  (Arab.  $g$ , Ital.  $g$  *schacciata*, Eng.  $g$ ,  $j$ ).

N. B. These compounds are not found in old, original languages,

but make their appearance first in the later, derived languages, or in the later periods of the ancient, through a growing tendency to assimilation and the breaking down (quetschung, schiacciatura), respectively, of the lingual and palatal sounds.

(4) *Flowing* (liquidæ), the *rumbling l*, and the *rolling or scraping r*.

(5) *Smothered* resonances through the nose (nasales), *ng, n, m*.

A Synopsis of this classification is given in the following

TABLE.

Sounds of the Epiglottis — Palate — Roof of mouth.

Hard	{	Thin (tenues)		k				
		Blunt (obtusæ)		g				
Soft	{	Gliding (lenes)	Scraping $\nu(\xi)$	Rough $\nu(\zeta)$	gh( $\xi$ )	Smooth	Melting	gh(j)
		Bustling (strepentes)			ch( $\zeta$ )			ch
		Hissing (sibilantes)						
		Flowing (liquidæ)					rumbling l	
		Smothered (nasales)					ng	
		Tip of tongue.	Teeth.	Lips.				
		t		p	} Voiceless (mutæ)			
		d		b				
Blaze		dh		bh(v)				
		th		ph(f)				
		{ whistling s			} Semivocal.			
		{ whizzing z						
		r rolling						
		n		m				

5. According to the conditions already adduced as determining the voicelessness or muteness of the consonants, i. e. the degrees of their destitution of the vowel sound, we may also graduate the *fixedness* of *corporeity* (body) of the consonants,— a distinction of the utmost importance to grammar. The distinction which we have noticed between vowels and consonants in general, as *flowing* (movable) and *fixed* (stationary),<sup>1</sup> repeats itself again within the region of the conso-

<sup>1</sup> This distinction coincides physiologically with that of the *light* and *shadow*,

nants, in ever diminishing circles, and with softened shades of difference. First there is the division into mutes as more fixed and distant from the vowel sound, and the semivowels which lie nearer to it. Among the mutes again we observe a distinction in point of fixedness between the hard (tenués) and the soft (apart from that founded on the hard and weak articulation). Among the hard mutes, once more, the labials (the outer) appear more fixed than the gutturals and linguals (the inner); and of these, finally, the former more so than the latter. So, likewise, among the semivowels, there is no lack of antitheses and gradations in respect of fixedness. The sibilants (nearly related to the linguals) are more fixed than the liquids, and among these *r* is more so than *l*, and *m* than *n* and *ng*. In this way the vowels and consonants in their contrasts and gradations, might be represented somewhat as in the following scheme :

CONSONANTS.				VOWELS.			
Fixed,		Obscure.		Flowing,	Clear.		
More fixed, voiceless.			More flowing, Semivocal.				
Most fixed or hard.		Soft.		Consonant oral vowels.		Purer gutt'l vowel.	
Exterior.	Interior.						
p	k t	ph ch th	s	u	i	a	
b	g d	bh(v)gh(j)dh	z	r l m	n(ng)		

6. *Grammatical and historical relation of the consonants.* Those which, as physiologically the most fixed, constitute the germ of the consonant system, viz. the *hard* (tenués) *p, k, t; b, g, d*, are also in a grammatical and historical view the *most original and characteristic*, the proper types or representatives of this element of speech,— while the liquids *r, l, m, n*, which fluctuate between these and the vowels,

the *clear and obscure*, which was introduced above. Matter, in proportion as it is fixed, or thickly compressed, is impervious to the rays of light, while the looser and more flowing, so much the more transparent is it and clear. But what the outward material world is to the rays of light, that are the functions of the vocal organs and the resultant sounds to the voice—rays issuing from the throat in speech; these the penetrating, illuminating principle, those the impermeable, dark matter. The stronger, more substantial, more fixed the latter, the less can the tones of the throat sound through; the looser and more flowing, the louder the tones, the more transparent as it were and clear. The analogy between the rays of light and the tone-rays (both having the air as their medium) and their modes of operation, is so close that in all languages the department of sound borrows its expression from that of light.

play a more subordinate part serving to accompany and harmonize the two elements. This primitive material of the consonants has gradually developed itself by means of a twofold *softening* process, viz. first by *Aspiration* through which the soft mutes (adspiratae), and secondly by *Assibilation* through which the sibilants are produced.

(1) Of *Aspiration*. It is evident that the dry and hard nature of those tenues must, in the bosom of words, be gradually softened, by contact with the vowels, through the influence of the breathing which accompanies the latter. And this softening influence of the breath manifests itself in two ways, according as the consonant is a *final* sound, *after a vowel*, or a *medial* sound, *between two vowels*. In the *first* case, since the breath can stream forth, thus gaining greater strength, there arises a *strong rustling, echoing* sound, which naturally appears most distinct in the case of the *strong* tenues, where the breath must force its way between the organs with some violence (*kh* [*ch*], *th*, *ph* [*f*]). Hence special signs were appropriated to these in the Greek alphabet ( $\varphi$ ,  $\chi$ ,  $\theta$ ) and  $\kappa\alpha\tau'$   $\xi\zeta\omicron\chi\eta$  the name of aspirates (the *weak* tenues  $\beta$ ,  $\gamma$ ,  $\delta$ , whose aspiration is less distinct, hence called *mediae*, being restricted meanwhile to a single character, for both the thin and the aspirated sounds); while in Hebrew and Syriac,<sup>1</sup> the aspiration of either kind is more properly regarded as a grammatical *modification* of the thin pronunciation, and the difference accordingly indicated by a mere diacritic point. — In the *second* case, where the breath of the preceding vowel cannot stream on but is weakened by the following one and as it were blown away upon it, a *light, vanishing* sound is produced, of a nature eminently appropriate to the *weak* tenues (*gh*, *dh*, *bh*), since the strong incline to maintain their aspiration in spite of the mitigating influence of the following vowel.

(2) By *Assibilation*, which is nearly related to aspiration, or may rather be regarded as a further extension of the same, the *interior* primitive consonants are drawn out in another way, to a more limited extent. As we have already seen that in aspiration, the articulation

<sup>1</sup> In those languages aspiration appears still in its original, purely *grammatical* character, its dependence on a preceding vowel; hence only in a *medial* or *final*, never an *initial* sound or *after a consonant*. But already in the *Arabic* and other *Semitish* dialects, and still more in the *Japhetish* tongues it has become independent, appearing indifferently in an *initial*, *medial* or *final* sound, appropriating to itself a special sign, and supplanting to some extent the old thin sound. Vid. the author's *Kritik of Ewald's Heb. Gramm.* in the *Hermes*, XXX. I. S. 11, 12.

which employs the broad surface, inclines to thrust itself forward a little (the rough gutturals into the roof of the mouth, the linguals constantly into the region of the upper teeth), so by assibilation, all the articulations of the tongue are pushed forward from the back part of the mouth into the region of the teeth; so that from linguals, palatals and gutturals, *sibilants* are formed. This tendency manifests itself, as a general remark, later than aspiration, but once commenced constantly extends its influence; and the later periods of language, accordingly, are distinguished by the prevalence of sibilants and the narrowness and deficiency of the lingual and guttural classes. The *linguals* are *most easily* and *earliest* assibilated (lying as they do so near the teeth that mere aspiration gives them a degree of sibilance, only smothered by the still existing contact of the tongue and teeth), and pass over into *smooth* or *sharp* sibilants — *t* into strong *s*, also into *ts* (Germ. and Ital. *z*); *d* into weak *s* (*z*), and the oriental *ϑ* finally into *ϑ*. This transformation took place so early that it lies back of all our alphabetic monuments; since we have already in the oldest Semitish mode of writing four sibilant sounds denoted, — a weak, Zain, two strong, Samech and Schin, and a very strong (for Western organs impossible), Tsadhe.<sup>1</sup> At a *later* period, however, the *palatals* and *gutturals* also come under the power of assibilation and pass over into *crushed* sibilants; partly into *simple*, *sch* (in a double category), partly into *compound*, *tsh*, *dsch* (viz. the weak tenues *g*, *gh*, *j* into the weak *sch* or *dsch*, the strong *k*, *ch* into the strong *sch*, *tsh*), now only before certain vowels, and now everywhere. This change does not appear in the old Semitish alphabet, but in the Arab. and Pers. (here only in the case of *g*) we find it, in the Sanskrit mode of writing which is likewise very old (here forming a complete series of what are called palatal sounds), and, among the modern languages, more especially in those of Roman origin. It probably began with the soft palatals and gradually drew the gutturals also, which are stronger and stand farther back, under its influence. — If, finally, the sibilant seems here to be mingled with a lingual sound, the reason of this is to be found in the near relation between the guttural (palatal) and lingual system, by virtue of which, sounds of the former class commonly, even without assibilation, become attenuated into linguals, and conversely (although we hold the

<sup>1</sup> Since aspiration, as before remarked, is not yet denoted here by a special letter, but first by the far later diacritic points, we might hence conclude that this kind of assibilation was still earlier than aspiration — unless perhaps the greater phonetical distinctness of these sounds occasioned the difference.

other to be the more original and prevalent process), the latter are thickened into the former.<sup>1</sup>

The more fixed and regularly graduated mutes push themselves forward in the softening process, in the series of their respective classes, while the more movable and unclassified liquids, *l, m, n, r*, experience individual changes in a more independent way. Still, a mitigating process may here also easily be traced. These fall, as we have seen, into two classes: those which are formed within the mouth by a loose and unsteady articulation of the tongue, (lingual liquids, as we might call them), *r, l*, and those which with a complete closing of the organs of the mouth, stream forth through the nose (nasal liquids), *m, n, ng*. In the former class, *r* is the earlier sound, from which proceeds *l* by softening and relaxation. Hence, those who cannot pronounce the *r*, (not merely children and stammerers, but even whole nations, as is known to be the case with the Chinese), substitute *l* in its place, and hence also in all languages, the frequent transition of *r* into *l*<sup>2</sup> (and also by exception the reverse). The second class are grammatically considered only a single sound, which takes the form, according to the organ of the following mute, before a labial of *m*, before a lingual of *n*, before a palatal of *ng*, and is thus subject to constant mutation.<sup>3</sup> So far, however, as these remain three distinct sounds, independent and unaffected by the mutes, *m* as a labial nasal, is the most substantial among them, and of the earliest origin. It is frequently attenuated, especially as a final sound, into *n*,<sup>4</sup> then sinks into a mere guttural resonance, *ng*, (the Nunnation of the Arabians, Anuswara of the Indians, nasillement of the French

<sup>1</sup> On this twofold increase and development of the consonant system, vid. the author's Treatise über die hebräische Lautsystem in the *Hermes*, XXXI. I. S. 10—12, 15, 16.

<sup>2</sup> Ewald Hebr. Gramm. § 31. S. 34. Comp. Grimm, I. 122, 386, 581. Schneider, Lat. Elementarlehre I. 209. Böckh in the *Studien* 4, 384. Fernow, Ital. Gram. S. 59. [See for further statements on the changes referred to in this and the following notes, the articles on the several letters in Freund's lat. Wörterbuch, and Lid. and Scott's Lex.]

<sup>3</sup> Comp. the Euphonic rules in Sanskrit in Bopp, *Lehrgr.* § 15, 24 ff; in the Greek, Buttman's *ausführ.* Gramm. § 25; in German, Grimm, I. 109, 586; in Latin Schneider, I. 309, 13, 315 ff.

<sup>4</sup> Thus the final *m* in Hebrew particles and flexion endings has passed over in the Arab., Aram. and other later cultivated dialects for the most part into *n*, — Ewald, *Heb. Gramm.* § 34; the Sanskrit and Latin *m* in flexion-endings is thinned down to *n* in Greek; so likewise in the middle and new High German. — Grimm, I. 386.

and of the South Germans, the stroked vowel of the Lettish,<sup>1</sup>) and so, finally, falls away altogether.<sup>2</sup>

In this manner, therefore, through the tendency to a softer form, the consonants of both kinds, mutes and liquids, are, within their respective circles, in a state of constant transition and change. We might naturally expect that transitions would take place also *from one province to the other*, and particularly in accordance with the direction hitherto noticed, *from that of the mutes to the liquids*. And the mutes do actually, as we have seen, pass over through assibilation into the class of semivowels, to which the liquids belong. Still, the sibilants, though forming one class with the liquids phonetically, adhere, in general, in a grammatical and historical respect, to the lingual letters from which they sprang; so that there even remains yet a sort of chasm between the province of the liquids and that of the mutes. At the same time, points of contact and transitions are not wholly wanting. Thus there is a twofold, narrow indeed, but somewhat practicable, path, which leads, especially in the Latin and old German, partly from the linguals, but chiefly from the simple sibilants *s, z*, to *r*, (which is likewise formed with the tip of the tongue, and stands physiologically very near them). In these languages, the older *s* standing in the middle or at the end of syllables, (and so weakened by contact with a preceding vowel, hence in the former case passing actually over, in the Gothic, into *z*), is very commonly changed, in the later periods, into *r*, e. g. *Furius* instead of *Fusius*, *dirimo* instead of *disimo*, *oris pluris* from *os, plus*; old German, *ror*, *ōra*, *hōryan*, *mēr*, *mīr*, from Gothic *raus*, *hausjan*, *ausō*, *mais*, *mis*.<sup>3</sup> In Latin, again, sometimes *d* passes into *r*, as *meridies*, from *medius dies*,<sup>4</sup> and in some of the German vulgar dialects, *t* and *d* in the middle of a word first into *dh*, then into *r*, e. g. lower Hessian *rēre* (Eng. *ready*), upper Hessian *Vārer*, *Brūrer*, *Werrer*, for *Vater*, *Bruder*, *Wetter*, (properly *Vadher*, etc). In the bosom of these languages, transitions of the linguals, also, take place, especially of *d* into *l*

<sup>1</sup> Here belongs also the so called *mytacism* of the Latin *m*, vid. Schneider, I. 301 ff. Böckh ubi sup. 387; whence the familiar mode of writing in MSS. *multu* for *multum*, and the like.

<sup>2</sup> On the mytacism which especially belongs here, (the resolution of *m* into *n* before vowels), vid. preceding note. The *apocope* and *syncope* of the *n* is very common, as is known, in all languages, — certainly effected, however, everywhere through the above-mentioned nasal resonance — particularly where a general historical relation appears, as between the Greek ending *ων* and the Lat. *o*. Schneider, II. 497.

<sup>3</sup> Schneider, I. 342 f. Grimm, I. 63, 121.

<sup>4</sup> Schneider, I. 257 f.

(likewise a lingual liquid, and probably through *r* as an intermediate step), e. g. *δακρυ* into *lachryma*, *Ὀδυσσεύς* into *Ulysses*, *olfacio*, compared with *odor*, Goth. *vaddjus* into *Wall* (Lat. *vallum*).<sup>1</sup> The same perhaps, may be noticed in the Semitish languages.<sup>2</sup> Finally, the labials, *p*, *b*, are found passing over into the liquid *m*, belonging to the same organ; in the Semitish languages, e. g. *מִבְּ* and *מִבְּלָה*, *פָּבָה* and *פָּבָה*,<sup>3</sup> in Greek and Lat., e. g. *promulgare* for *vulgare*, *μηλα* = *βηλα*, (*balare*), in Germ., *schwalm*e for *schwalbe*.<sup>4</sup> Other examples, as LXX. *Λεμνα* for *λεμνα*, *σεμνος* for *σεβνος* (from *σεβω*), *somnus* from *ύπνος*, *damnum* from *δαπανη*, *Bamberg* for *Babenberg*, *Stimma* from *Suibna*, belong to assimilation.

As we have thus seen certain transitions of the finer mutes into liquids, so again, the liquids, in which the consonant sound has reached the utmost limit of fluidity and fineness, sometimes pass over into the province of the vowels; much more rarely, however, since the separation between consonant and vowel is quite too important to be easily overstepped. The semi-vocal nature of *r* and *l* appears most clearly in the Sanskrit, by the formation of two proper vowels, *ri* and *lri*. In the modern European languages, they sometimes resolve themselves into *u* and *i*; in French and Dutch, namely, *al*, *ol*, into *au*, *ou*; in Ital. *l* between a mute and a vowel, into *i*, e. g. *fiore*, *chiare*, from *flos*, *clavis*,<sup>5</sup> in Norweg., or into *oi*, e. g. *hoin*, *coin*, instead of *horn*, *corn*.<sup>6</sup> And as *l*, *r*, resolve themselves into *u*, *i*, so, again, does *n* sometimes into the throat vowel *a*. Thus in the Suabian vulgar dialect, after long vowels, e. g. *nû*, *dû*, *grû*, *zie*<sup>a</sup>*da*, instead of *nun*, *thun*, *grün*, *zehnten*; since, however, this counterfeit *a* is universally a favorite resonance (a sort of Pattahh furtive) after long vowels, we ought perhaps to consider the *n* as apocopated here, or rather resolved into that nasal tone so agreeable as a final sound to the South Germans and the French, which, no longer representing a proper consonant sound, approximates to the vowel *a*. This transformation of the *n* into *a*, is more extensively and distinctly witnessed in the Greek, not merely in the hard, and for Greeks impossible, position between the two consonants, in 3 plur. perf. pass. as *τερτά*

<sup>1</sup> Schneider, I. 255 f. Grimm, I. 66.

<sup>2</sup> Ewald, Heb. Gramm., S. 36 f.

<sup>3</sup> Gesenius, Lehrs., § 32, I. Ewald ubi sup. <sup>4</sup> Schneider, I. 315. Grimm, II. 193.

<sup>5</sup> Strictly perhaps *j*, as the *i* is sounded before vowels, and then it coincides with the *r* in many words between *a* and *o* or *io*, e. g. *Gennaio*, *caprajo*, *notajo*, for *Gennaro*, *capraro*, *notario*, and with the French pronunciation of the ending *ail*, *ail*, *île*, etc., as *aï*, *eï*, *ij*.

<sup>6</sup> Grimm, I. 570. Comp. 580, 581.

*πατας, ἐγθάγατας* for *τεγαπατας, ἐγθαγπατας*, but also in the soft Ionic dialect, consistently with its known fondness for the prevalence of vowels, in a simple position with *τ* after vowels, e. g. *πεπαυατας, κεκλεατας, πυθούατο, κεχολούατο, τιθέατας*, and even *ἐβουλέατο, ἰγέατας*, (instead of *ἐβούλοτο, ἰγαντας*). Here belong also, perhaps, the customary forms of the 3 pl. pres. *ἰζέᾱσι, διδόᾱσι, τιθέᾱσι*, etc. (from *αυτος, ουτος, εντος*, etc.), if we can assume that the *α* was originally short, and has been lengthened only by a misapprehension of its character. Still more prevalent is this use of *α* for *η*, in the flexion endings, *υη, ηη, ουη*, etc., e. g. in acc. sing. 3 decl. *ἰχθυα, ηθδυα, βοα, εἴγεα*, etc., Ionic for *ἰχθυη, ηθδυη, βοη, εἴγηη*, etc., *παλγωα, μαλγωα*, compared with *-ων, δασποτεια*, with *-ηη*; again in plup. Ionic, *εα* for *ουη*, impf. *ἐτιθεα* for *ἐτιθηη*, *εα* and *ἦα* for *ἦη*, *ἦᾱ* for *ἦουη*, and the like. One feels the more tempted to reckon these latter phenomena, with Buttmann, with those of the former kind, and recognise throughout the Ionic inclination to resolve *η* into *α*, since such a resolution, effected as above mentioned through the resonance *ηγ*, is precisely appropriate to the final sound. But it must not be overlooked here, that these variations are connected with that widely pervading, and as yet imperfectly investigated mutation of the flexion endings, *υ* and *α*, partly in the formation of the accusative, partly in the flexion of verbs (especially in the historical tenses) when the *α* rests not on a mere volatilization of the *η*, but, as appears from a comparison of the Sanskrit and other affiliated languages, on the apocope of an earlier final *η*, from which the ending *η* has sprung. So that the *α* may have thus been originally no more than the union-vowel to connect the ending *η* with roots ending in a consonant, while those ending in a vowel, append immediately the *η* into which *η* has dwindled.