either *fated,* the vocal chords being wide apart and hence not vibrating, but allowing breath to pass freely, or *voiced,* the vocal chords being close together and vibrating fully, or else *whispered,* the vocal chords approximating but not touching, and their edges only vibrating. The last is only a variation of the second and needs no further consideration. Flated and voiced sounds are either *fixed,* the position of the vocal organs remaining unchanged throughout, or *changing,* the position constantly altering from one fixed position to another, forming “ glides.”

3. *Generic and Specific Speech-Sounds.—*Fixed speech- sounds, intended to be the same, vary from speaker to speaker, and in the same speaker at different times. Those who attempt to write sounds from dictation rapidly find that they have to disregard these specific differences, and simply discriminate genera. And much difference of opinion has always existed as to the discrimination and number of genera.

4. *Vowels,* that is, *vocals,* are so called because their positions allow the voice-sounds to pass with least obstruc­tion. The three genera (ii, aa, uu), which have always been distinguished, differ greatly in the positions of the tongue and lip, that is, in their mouth cavities, and hence resonance. The usual method of describing speech-sounds is by the shape of the cavity, which, however, could be shown to be insufficient for many reasons. As differently shaped cavities resound to a note of the same pitch, Helmholtz proposed the last for discrimination. The pitches of (ii, aa, uu) are widely different, (ii) having the highest and (uu) the lowest ; but the extreme diversity of results in attempting to assign the actual pitch of vowel cavities shows that this will not suffice. Resonance cavities do not create but merely modify original vowel qualities of tone, and these last seem to depend upon the will of the speaker, guided by his powers of appreciation and imitation, both extremely variable, partly hereditary, partly depending on conformation of brain, and partly acquired during adolescence.

Melville Bell, Sweet, Storm, and Sievers, and all who have latterly examined the subject distinguish at least two series of vowel genera, that is, two forms of each genus, called “ narrow ” and “ wide but they are far from being agreed as to what the difference consists in and how it is produced. Sweet differs from Bell, and Sievers does not wholly agree with Sweet. All, however, call (ii, uu) narrow, and *(i, u)* wide.

Besides these two series Bell introduced another distinc­tion applying to both, termed “ rounding,” consisting in a greater or less closure of the lips, slight for (aa), much for (uu), and intermediate for (*oo*). But this character is not scientifically precise, because all the vowels can be produced with the mouth wide open (by means of a com­pression of the arches of the palate), and still more easily with the mouth at least as much closed as ordinarily for (uu). Other phonetists wish to introduce distinctions based upon the shape of the apertures between the lips.

There is also a feeling of intermediateness between vowel- sounds. Thus (yy) is felt by many to lie “ between ” (ii, uu), and (œœ) between *(oo, ee).* But we also have other intermediates which arise spontaneously when listening to new languages and dialects. Thus in west Somerset there is a vowel between (ə, i), one between (y, *ə*), and another between (*ə*, œ), and the positions for these vowels have not been ascertained. These are only specimens of numerous cases. Hence the positional discrimination breaks down at present. Nevertheless it is very good so far as it goes, but must not be pressed to extremes.

All the vowels may be also flated and whispered ; that is, the position and dictating vowel-intention remaining, the totally or partially open vocal chords forbid voice and

produce sound more or less recognized as substitutes for the true vowels. Write (ii) voiced, ('ii) whispered, (“ii) flated. This distinction becomes of more importance for consonants.

5. *Glottids and Physems.—*A *glottid* is the action of the vocal chords in altering the form of the *glottis* or tongue-shaped space between them. (1) The glottid is *clear* when there is no attempt to utter the vowel until the chords are brought together, yet the utterance takes place at that instant. This may be written (,ii) initial. Similarly, a vowel may end with a clear glottid (,ii,), no flatus escaping after the vowel ceases. This clear glottid is usually inferred and not written. (2) The glottid is *gradual,* written (ן), when flatus passes through the vowel position before the chords are sufficiently approximated for voice, or after they are separated, thus (ןiiן) is really (“ii+ 'ii + ii +'ii +“ii). This is an exceedingly common habit with some speakers. (3) The *check* glottid (;), Arabic *hamza \*,* arises from keep­ing the chords tightly closed so that they cannot vibrate, and then releasing them with an explosion. It may be final in reverted order in Arabic, and it is common as an initial in German, as *;eine ;er;innerung,* and is used as the *catch* accent in Danish, as *ma;nd,* a man, distinct from *man* = F *on.* (4) An exaggeration of (;) gives Arabic (g⅛in) £, the bleat, with a rattle in the cartilaginous glottis.

*Physems* are the bellows-actions of the lungs. (1) The jerk (h) or sudden puff of either vocalized or flated breath, accompanying either clear or gradual glottid. The first, with voice only, is the singer’s and Bengali aspirate ; the second, with flatus, is the Scotch or German aspirate. (2) The *wheeze* (*h*), Arabic stated by Czermak to arise from

suddenly forcing breath through the cartilaginous glottis.

6. *Vowel Glides and Vanishes.—*So far the positions of the vowel above the larynx have been supposed to remain unchanged. In this case many degrees of length may be distinguished, as (ă) very short, (a) short, (à) medium, (aa) long, (aà) drawled, (aaa) extravagantly prolonged. If the vowel sign consists of two parts, as (ah), only the first is marked doubled or tripled for these lengths, as (ăh, aah), &c. In English it is felt very difficult to pre­serve the positions for long *(ee,* aa, oo), and these vowels gravitate to, without by any means reaching, (i, ə, u). The first and last may be written *(edj, odw),* implying what are termed *vanishes* or gliding alterations of sound, accom­panied by alterations of position as the vowel ceases. This change is generally unintended and mostly used uncon­sciously.

7. *Diphthongs.—*But there are conscious changes to quite different positions. The first and last vowels are then taken as fixed, one of them having the chief stress, and there is a vowel glide between them. These form *diph­thongs ;* the stress and glide being the chief characteristics are marked by ('), and the two elements are juxtaposed. The glide is generally short and close in English, longer in German, still longer and looser, or “slurred,” in French and Italian. There are many typical classes, i. With weak final (i), unanalysed (a'i), analysed (ái, á*i,* ə'*i,* Ǝ'*i*, *éi,* é*i,* E*'i,* æ'i), &c., all common. ii. With weak final (u), unanalysed (a'u), analysed (áu, á*u,* ǝ*'u,* Ǝ'*u*, *éu,* é*u,* E'*u,* æ'*u*), &c., all very common, iii. Weak final (y), theoretic German *eu* (óy, áy), Devonshire *ow* (œ'y15). iv. Weak initial (i) or (ĭ), used for (J) in Italy, France, Wales, &c. v. Weak initial (y) in Fr. vi. Weak initial (u) or (ŭ), used for (w) in Italy, Spain, France, Wales, &c. vii. Murmur diphthongs ending in weak (*e*), common in English, but generally with the option of trilling an (r) after it, and hence written (ɹ), as in *ear, air, oar, lord, poor, pure, pyre, power (ii*ɹ*,* eeɹ, ooɹ, lAAɹd, puuɹ, pĭ*uu*ɹ*,* pa'*i*ɹ, pa'uɹ) ; the *r* is always trilled in Scotland, viii. The vanish diphthongs