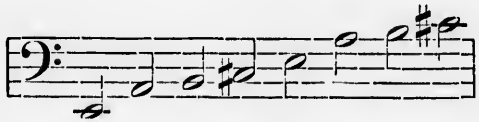
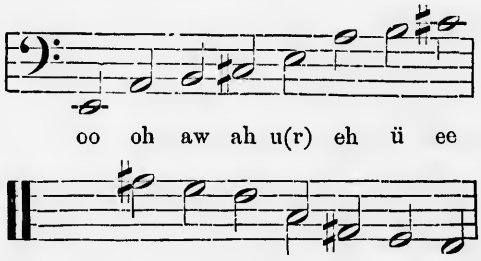


	oo	oh	aw	ah	u(r)	eh	ü	ee
Italian or German:	ū	ō	o(r)	ā	e(r)	ē	ü	ī
French:	ou	o	o(r)	a	e (final) é		u	ī.

At the same time (in keeping with what has been stated and proved by Helmholtz and Bell as to vowels having a double pitch) we have perceived a secondary descending scale of fainter sounds, proceeding concurrently with the ascending scale and reversing its intervals; at least we sometimes seem to trace this descending gamut from the keynote throughout, but it is especially conspicuous with the last three vowels—numbers 6, 7, and 8 of our table, doubtless because in uttering them more of the breath escapes at the side of the tongue. Thus our whole harmony would run—



We then bethought ourselves of trying the vowels as spoken instead of as whispered. They seemed to be chromatic; but that clashed with their whispered form, so we could scarcely credit it. Dropping the study for some time, we tried once more; and we were convinced that chromatic they were. Thus an impression that we, and doubtless many besides ourselves, have had in childhood, that a chromatic scale sounded like people talking, is fully explained.

The keynote for the spoken vowels we find to be the same as for the whispered ones.

But now comes a strange discovery. Whereas if all the notes on the keyboard, black and white, be played from *e* natural to *b* natural, all our long simple vowels are sounded, if only the white notes be played, the vowel sounds that alone bear a name in most European languages—the German and Italian *a, e, i, o, u*—will be heard and no others. Thus, marking the spoken sounds by their most common symbols, we find that their correspondence in musical characters is—