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FOUNDATIONS OF SPEECH

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Types of World Tragedy

FOUNDATIONS OF SPEECH

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Preface

Speech is man's most fundamental and most universal means of social adjustment, experience, and control. Certain aspects or phases of existence may be more important to man as a living organism. Acts fundamental to the processes of life itself have to be ranked, of course, as more important to the living organism than is speech. As soon, however, as we move from the consideration of man's problems as an individual facing the tasks of keeping alive and consider man as a social being, we are in a sphere in which speech is pre-eminent. Speech is altogether the most important activity of man's social existence.

We usually form our basic estimate of any new acquaintance more completely on that person's speech than on any other one thing, and often more than on all other things put together. It has been true for some time, and it is becoming more and more true each year, that business, social, and professional opportunities are limited for, and often completely closed to, young men and women whose speech is not satisfactory. Those who are not efficient in speech situations are more and more being left behind in the competition of the present age. Not only those with what is properly called defective speech are so handicapped; young men and women who have neglected to develop proficiency in speech, even though they are not actually deficient, often find their progress impeded and their ambitions thwarted by inability to function well in normal speech situations.

A few years ago an eminent engineer told the students of the Cornell College of Engineering that the greatest single cause for failure in the engineering profession was a lack of ability in public speaking. It was not a failure to know engineering, to diagnose an engineering problem, and to lay plans

for the proper handling of it, but a failure in ability to take the plans before a responsible group and so discuss them that they could be understood and adopted. Being able to write about plans or to dictate a letter will not do. In the critical situations in life, men and women everywhere who have any competence at all in speech abandon the printing press, the typewriter, and the fountain pen and seek an opportunity to confront the problems, and those who are to solve them, through the basic, live, real medium of speech.

The reference to speech as an "overlaid function" carries very important implications. Man has no physical units of any kind to serve primarily as speech organs. Speech has borrowed and uses for its own purposes structures that have a more vital purpose in connection with the ordinary life processes of breathing and eating and drinking. This is the basic reason why a problem of speech disability is usually not a question of health or disease and cannot normally be treated by a physician as would a problem of disability of digestion, for instance. Physicians are interested and competent in questions of health and disease and of the functioning of the bodily organs in so far as these questions are concerned with the primary vital purposes of these organs. A person may have superlative health, from the physician's viewpoint, in every structure of his body and be incompetent in speech. Likewise, a person may have a thoroughly diseased condition even in some of the organs of the body which play a most important part in speech and still have substantially perfect speech. Speech is not a matter of health and disease primarily; it is substantially never a problem for the physician or the surgeon, except when the physician and the surgeon act in consultation and coöperation with the speech specialist.

Speech, from the viewpoint of physical science, can be reduced to the physical phenomena of sound waves and light waves. When one is speaking, what he is doing, reduced to its lowest physical terms, is sending out sound waves and

light waves which strike the ears and eyes of the listeners. Through these means, and these means alone, there is speech between the speaker and the hearer. The sound waves and the light waves carry three types of stimuli; namely, language, voice, and action.

The first of these—words, the language element in speech—is a matter of great importance. We do not have to labor that point. Indeed, much more harm has been done by the wholly unfounded assumption that language is the only important aspect of speech than by the much less widely accepted, but equally absurd, assumption that language is of no importance in speech.

Speech, of course, is independent of any particular language. As far as speech problems are concerned, it makes no difference what language symbols are employed in speech, as long as the language symbols used are common to both the speaker and the hearer. If you have in a given school, a competent teacher of speech who is equally at home in French, English, and German, and have in that school three groups of students, one a French-speaking group, one an English-speaking group, and one a German-speaking group, the teacher of speech can teach speech to each of the groups at separate hours, *and he can still be teaching the same thing all three hours.*

Not only is this true of the speech work of the normal classroom, but it is true also in probably the great majority of cases in the speech clinic. It follows that speech cannot ever properly be either labeled or dealt with simply as *oral English.* As a matter of fact, many of the most important matters, theories, truths, principles, and facts that receive attention both in the normal speech classroom and in the speech clinic were first formulated and spoken about and written about in Latin and Greek and French and German, and various other languages, many of them centuries before anyone anywhere either spoke or wrote in the English language.

The second element in speech is the use of voice as voice.

By this we mean the stirring up, in the hearer, of responses to merely the sound of the voice, without regard to the words that are being used. This situation is very common. You read in the popular mystery stories that, as the hero was walking by the old abandoned house, he heard a cry that was "a cry of terror and not of pain." If, as you read that, you accept it as a possibly accurate statement of what might have happened, you have to assume that voice as voice carries meaning independent of the words used. For the person in distress, whom the hero of the story heard, did not cry out in the words of any language, "I am in terror and not in pain." Any experienced nurse or mother has probably recognized scores of times, and acted upon the recognition, that certain sounds from the baby indicate, in one instance, pain, in another, joy, in another, anger, in another, hunger. All of us communicated with parents and nurses by means of voice and action long before we had any words. The fact that this was done effectively, that communication was complete and reasonably accurate, is proved by the fact that people grow up. If babies were not able to communicate without words through the medium of voice and action alone, at many crises in infancy, very few probably would survive the first year.

The third element in the speech situation is action. By action we mean everything that the eye gets from the speaker, as distinct from what the ear gets—posture, carriage, facial expression, gesture, the smile, the wink, the shrug of the shoulder, the actions that speak louder than words (as actions always do in critical situations)—the action which shows what you are so completely that no one will pay any attention to what you say. This is the part that action plays in speech.

When the language that one uses in a critical speech situation is in serious conflict with the voice or action elements in speech, language is universally disregarded, and the implications of the voice and action are followed. Irony, sarcasm, and innuendo are commonly expressed by using the

voice in such a way as to reverse or greatly modify the plain meaning of the language used. When your "actions do belie your words," the words have little effect. He who protests that he is not angry in a voice that is cracking with anger, deceives no one. A welcome in words expressed in a hostile tone of voice cannot possibly be a welcome in effect.

Perfect speech consists in the perfect coöperation of language, voice, and action in a unified, integrated, purposeful activity through which men and women perform the most important functions of social existence. No educated man or woman can get the most out of the rest of the educational experience, either in immediate tangible rewards or in "the enduring satisfactions of life," if, in the years of formal education, speech needs have been badly attended to or wholly neglected. Courses in speech are designed to help each individual student to make a good start, at least, in gaining the knowledge and the skill in speech without which most of the rest of the possible benefits of education are likely never to be enjoyed.

This book has been planned and prepared to do whatever a book can do in helping the student to make a good start in gaining knowledge and proficiency in speech. A comprehensive and accurate book can do much to help in such a situation, but it cannot do the whole job. The teacher and the student (and primarily the latter) must bear the chief burdens.

In planning this volume, the editor and the publishers had three definite purposes in view. First, we wanted it to be comprehensive. We wanted it to include all the material that might be considered of primary importance by any teacher or student interested in studying the foundation principles and facts, the basic elements, the bedrock fundamentals of human speech. We planned a book in which each teacher or student could choose the parts he wanted for any purpose, and omit the parts that were not of immediate importance. Second, we wanted each chapter to be pre-

pared by a scholar and teacher who could write with accuracy and authority on the subject treated.

Third, we wanted a book with a national background, a book coming from the training and experience to be found in a wide variety of institutions and sections of the country. We wanted a book that represented the best thought, the best scholarship, the best experience, and the best standards of all America. Geographical and institutional backgrounds, as well as personal qualifications, were carefully considered in selecting the various authors. It should be said here that when Dr. Mallory was chosen for his part in this enterprise he was a professor in the University of Wyoming. Thus, the original geographic distribution of authors was: New York, Illinois, Iowa, Wyoming, and Louisiana.

Including the editor, the six men who have produced this book had their high-school training in six different states: New York, Pennsylvania, Wisconsin, Missouri, South Dakota, and Washington. Their college training was acquired in seven different states: New Hampshire, Pennsylvania, Illinois, Missouri, South Dakota, Wisconsin, and Washington. Their graduate work was taken in eleven different colleges and universities in eleven different states.

In teaching experience, this group of men has something over one hundred years of college and university teaching in fourteen different colleges and universities, including Dartmouth College, Brooklyn College, and College of the City of New York in the East; the Universities of Wisconsin, Michigan, and South Dakota, Northwestern University, and the State University of Iowa in the Middle West; the University of Louisiana in the South; Oregon State College and the Universities of Washington and Wyoming in the Far West.

Foundations of Speech is not a compilation of independent essays. Before any writing was done, the whole book was planned as a unified treatment of the fundamental elements in the study of speech, covering both knowledge and pro-

ficiency. The entire text has been read, commented upon, corrected, and approved, not only by the editor but also by each of the authors. The principal responsibility for the individual chapters is as follows:

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FOUNDATIONS OF SPEECH

CHAPTER 1

Speech and Language

Sometime in the first century after Christ, the Spanish-born Roman rhetorician Quintilian set down a vivid and discerning observation which has been freely rendered in these words:

> God the all-powerful father of nature and creator of the world hath exalted man above the animals by no other character so potent as the faculty of speech.

Speech was thus designated by a great teacher as the peculiar attribute of humanity. We may be sure that Quintilian was thinking of all the implications of his sweeping statement: Not merely that man is the only creature whose code of audible and visible symbols is adequate for detailed communication, and that by means of such communication an individual can cooperate with his fellows and secure their cooperation with him; but also that speech can be used as the instrument of abstract thought, and that it is a thing capable of being shaped into forms of permanence and beauty.

Priority of Speech

In view of the age-long priority of the act of speech over any written symbolization, the word *speech* itself assumes primacy over *language, dialect,* and the many other words that have come to be associated with this peculiarly human activity. For if we dismiss with brief but appreciative mention all of the random tentative explorations of animals or primitive man into the uses of pantomime for communication, we come directly to the human audible code with its vocabulary of words and intonations, and to the human visible code with its vocabulary of facial expressions and

bodily postures. Here in these things is speech, the foundational fact from which all ideas of language, dialect, and the like, spring, and to which they all must be related. Likewise, if we dismiss in a similar way the random tentative explorations of an infant into communicative media, giving due consideration to the fact that mankind had to invent his code as he went along, whereas the infant has only to learn one already invented, we come again to the audible and visible human code, speech, which the infant learns as the foundational fact from which he proceeds toward every other concept regarding communication.

The term *speech,* then, has a certain superiority over the other related terms we have been using, at least in chronology. For the acts it designates, that is, the uttering of meaningful vocal sounds and the making of meaningful movements of face and body, precede, both in the race and in the individual, any development that may be called language, dialect, or anything equivalent or derivative.

Enduring Qualities of Speech

But we have spoken of speech as being capable of enduring, capable of continuing its existence past the moment of utterance and even past the lifetime of the speaker and his listeners. Here we immediately depart from speech as an audible code and as a visible code appertaining to the movements of the human body, and we refer instead to a different kind of visible code, written on some substance, such as stone, parchment, or paper. Here we have language.

Language

Language, considered in the arbitrary, narrowed sense of this discussion, is the complement of speech. Speech is an audible code coupled with a visible code in the form of bodily movement; language is inaudible, and is a visible code in the form of written or printed words—symbols of symbols, so to speak, since words stand for sounds,

which in turn stand for meanings that may be aroused in a hearer. Speech is fleeting, momentary, each word being little more than instantaneous; language is, if desired, permanent, enduring as long as the material upon which it is inscribed endures. Speech is limited to the area within the sound of the speaker's voice or, in these later days of mechanical marvels, to the telephonic connection or wireless hook-up being utilized; language is theoretically entirely unlimited in its distribution, since print may be sent everywhere.

Contrasts Between Speech and Language

Speech and language have contrasting advantages and disadvantages. Speech can be changed, even while being uttered, to fit the mood, audience, and occasion; language cannot be so changed, for once printed, it is unchangeable and cannot even be brought up to date without the necessity of a revised edition. Audible speech is augmented by its own possibilities of variation in pitch (intonation), force, volume, and intensity, and by the simultaneous aid of the visible facial, gestural, and postural code; language has none of these aids when read silently, and it is at the mercy of the voice and pantomime of the reader when read aloud. Speech stands or falls on its single momentary utterance—unless, perhaps, the speaker repeats what he has just said, or expounds it—and the hearer cannot stop to think upon a statement, for fear of losing the next statement; language may be read and reread, pondered upon, and discussed at any point, without danger of losing what follows on the next page.

Similarity Between Speech and Language

On the other hand, speech and language have many things in common. Both can observe the time-honored rhetorical virtues of unity, coherence, and emphasis. Their unity may be relieved, and at the same time strengthened, by variety, and their emphasis heightened by vivid wording and cli-

mactic arrangement. Both will profit, now that the days of turgid, florid speaking are past, by simplicity, by sincerity, and by as great a brevity as is consistent with necessary completeness. Both take on greater beauty when worded with reasonable regard for euphony. In short, both speech and language are improved to the degree to which they are constructed in agreement with the well-tested principles of rhetoric and prosody, as seen in narration, exposition, persuasion, or argument, or in the novel, short story, drama, lyric, eulogy, or simple conversation, according to the purpose of the speaker or writer.

Other Meanings of Language

Language may be used with other meanings than the one just employed. It may refer to different tongues, as French, Spanish, German, English, etc. Here it is a broad term, including speech as a subordinate term, since a given language, say Russian, can be both spoken and written. Again, language may be used to refer to diction or word choice; or to style, as when we speak of lofty language; or to decorum or convention, as when we speak of insulting language or dignified language.

Other Meanings of Speech

Speech, too, may take on expanded meanings, as when we speak of standard speech, substandard speech, New England speech, New Orleans speech, and so on. In some senses, the word speech may be used interchangeably with language, as when we describe vulgar speech as bad language.

These categories quickly begin to overlap, in ways baffling even to the student of semantics. That is inevitable when such useful and versatile words as speech and language are allowed a latitude of definition greater than that permitted at the first of this chapter. There, in order to maintain clarity and sharpness of distinction, speech was restricted to the audible code and the visible bodily code;

and language, to writing and printing. But in untechnical communication, both words have many meanings, some of them identical with others.

Dialect

It remains to comment on the word dialect as it will be used in this book. Dialect may be defined as any form of a language (language here in the sense of Italian, Chinese, and the like) which is distinguishable in some of its pronunciation characteristics from another form of the same language. This definition does not limit the use of the word dialect to broken or substandard forms, such as Norwegian dialect, mountain dialect, or Negro dialect. It includes standard forms also, such as upper-class London dialect, eastern dialect, and the like. Defining dialect thus, we may say that all the forms of a language distinguishable by their pronunciation, including both the standard and the substandard, the educated and the illiterate, are dialects. A language without dialects is hard to imagine, for such a language would have to be spoken only by a population perfectly homogeneous in all respects, so that the language would have one and only one form. A certain Indian tribe that is believed to have only one survivor may conceivably be said to possess a language without dialects.

We shall now take up speaking in our own language, English, in the light of some parts of the foregoing discussion. In the main, we shall deal with American English.

CHAPTER 2

Sectional Differences in Pronunciation

The English language is sometimes referred to as a Low-German dialect. This designation provokes consideration. English is indubitably Germanic. Along with Dutch, Low German (the German of the North Sea lowlands), and High German (the German of the central and southern highlands), it is one of the descendants of West Germanic, which in turn, along with North Germanic (Old Norse, including Old Icelandic) and East Germanic (Gothic), stemmed in barbaric times from Primitive Germanic. But it is hardly correct to refer to English as a dialect. Rather, it is a group of dialects and, apparently, has always been so. For even at the beginning, the Teutonic invaders—Jutes, Angles, and Saxons—who swarmed in the fifth and sixth centuries from the continental North Sea coast across to Britain, spoke variant forms of what came to be called Anglo-Saxon or Old English. Further, the language differences which the several groups of conquerors brought with them were destined to be broadened by the influence of the native Celtic, particularly in Scotland, Ireland, and Cornwall.

Dialects in Old English

The earliest monuments of English literature show the expected dialectal differences. Caedmon and Bede wrote in Northumbrian; the *Vespasian Psalter* is in Mercian; and our version of *Beowulf* is a West-Saxon rendering of an Anglian original. Throughout the Old English period (450-1100), the existence of not *a* dialect in England, but several dialects, is proved over and over by the surviving writings. We customarily use tenth-century West Saxon for textbook study in Old English, but that is only a convention adopted for the

convenience of beginners. It is true that the best examples of Old English literature are in West Saxon, but there are also writings in Kentish, Mercian, and Northumbrian. The dialect subsequently contributing more to American English than any other is Mercian.

Dialects in Middle English

Through the Middle English period (1100-1500), the dialectal differences were accentuated, rather than lessened. The colonies which follow up a conquest are a less mobile population than raiding parties, armies, and migrant hordes; and in days of slow transportation and communication, such colonies soon settle down into relatively self-contained and semi-isolated communities.

Communities thus out of connection with each other do not long continue to speak alike, even if they chance to be alike in the beginning. For it is a principle of sound change that the neuro-muscular images (neurograms, conceived to be laid down by migration toward each other of the terminal axone and dendrite filaments entering into the formation of synapses), which constitute our only memory of speech sounds, are prone to fade. It follows that an individual cannot remember how he spoke a sound, or how he heard it, well enough ever to reproduce it perfectly.

Now, so long as the imperfect reproductions of a group fall equally on both sides of a median, the average speaking of a sound remains much the same. But let something disturb this balance, such as the influence of a hero, a fad, or a numerically superior population of the conquering or the conquered in the community, and the sound may shift with remarkable rapidity in the direction toward which it has been inclined. Meanwhile, a neighboring community, no matter how alike initially, may incline for analogous reasons in a quite opposite direction, or it may remain unchanged.

Middle English times (1100-1500) in the British Isles were ideal for increasing among communities the divergences that

were evidently well under way in Old English times. The war with the Normans brought speakers of the different English dialects within hearing distance (and therefore within the linguistic influence) of each other again; but the abolition by the French conquerors of the use of English at the Court and in the courts robbed the language of strong unifying influences and allowed it a latitude conducive to the widest variation.

It follows that Middle English times were times of many dialects. *Cursor Mundi* is in Yorkshire, *The Canterbury Tales* in London dialect, *Havelok the Dane* in Northeast Midland, *Guy of Warwick* in East Midland, *Sir Gawayne and the Grene Knight* in West Midland, *The Ormulum* in Northeast Midland and Northern, the Thornton MS. *Morte Arthure* in North English or South Scottish.

It is thus seen that even before English was English, it existed in divers dialectal forms. And after it came to be called English, dialectal differences continued through Old English and Middle English times.

Dialects in Modern English

The same thing is no less true for Modern English times (1500——). The English today, both in the British Isles and in those parts of the world which Britain has colonized, remains broken into many differing forms.

Dialects in the British Isles

In the Isles themselves, sharply contrasting forms of English are spoken in Ireland, Scotland, Wales, and in the remaining part of England proper. Numerous as these may seem for so small an area, they are further subdivided to an astonishing degree. For in a manner hard to conceive in modern America, or in the light of the huge migrations of English, Irish, Scotch, and Welsh to this country, the home population of the British Isles is relatively immobile. In England, the habits of unshifting tenancy inherited from

feudal times; in Ireland, poverty and a quasi-congenital, if quizzical, pugnacity; in Scotland, poverty, forbidding natural barriers, and steadfast clannishness—these have rendered thick and sluggish the natural fluidity of inter-community exchange of populations, and so have promoted the differences of dialect observable throughout. The results are evident in the wide variations among the dialectal forms typical of Cork, Kerry, Galway, Dublin, Antrim, etc., in Ireland; of Fife, Caithness, Aberdeen, Dumfries, etc., in Scotland; and of Northumberland, York, Lancashire, Kent, Devon, etc., in England. It is hardly too much to say that every county in England, Ireland, and Scotland has its unique speech characteristics, and in any number of cases so do towns, communities, and other naturally coherent areas within the counties, as, for example, East Riding and West Riding in Yorkshire.

Besides the geographic divisions of the British Isles, there are the social stratifications peculiar to a country which retains to so late a date the outworn shreds of a feudal and monarchical social fabric, with its fictions of gentle birth and hereditary titles, and its assumption of permanent upper, middle, and lower classes. Then there are the income-group stratifications, and the stratifications of natural intelligence and of education, which produce speech differences the world over.

Dialects in the British Empire

Among the British dominions, colonies, protectorates, and dependencies, the dialect lines of the homeland are harder to trace. Colonial populations are more adventurous, and hence more fluid and mobile than the stay-at-home populations. Social, titular, and monetary barriers, too, seem of lesser importance to the British subject away from home than to the one at home. As a consequence, the outlying English-speaking areas differ less from each other, and their parts less from other parts, than is the case at home. Besides, the impact of native populations, or of other Euro-

pean language groups, has some effect. In Johannesburg, for example, the English speech shows frequent effects of contact with the *r*-trilling Afrikaans (the standard Dutch of South Africa, which is an official tongue in that area, alongside English). Likewise, in Quebec, English shows modifications attributable to daily contact with the other official tongue of that area, French.

Perhaps one generalization can be made concerning the English of the British countries in Asia, Africa, Australasia, Oceania, South America, Central America, the Caribbean, and Canada: The speech tends more to resemble lower-class homeland speech than upper-class home speech. At least this is true for a time, before the forces of education gain full momentum; for colonial populations everywhere are made up largely of poor people who have left home in search of better fortune, and who naturally take with them the speech of their social and economic stratum. It follows that it is hard to find a British colonial speech that does not have somewhere in it a startling Cockney flavor, derived, of course, from the huge contribution which the poor of London make to every area of possibly happier and more prosperous existence. Canada shows the Cockney imprint least, Australia most; for Australia not only has drawn its natural measure of Cockney migration, but it also carries forward the speech of the many prisoners jettisoned there by the British government in earlier times. Thus, a wealthy Australian traveling in America may surprise his hearers by calling his country "Austrylia" [ɔstraɪljə], and a visitor in a Sydney secondary school may not quite believe his ears when a well-trained teacher of physics lectures to his pupils on "wites" [waɪts] and "mysures" [maɪʒəz].

Dialects in the United States

The relation of one-time colonial speech to the speech of the mother country shows least in the United States, perhaps, in part, because the United States is the oldest of all the migrant English-speaking groups, and certainly, in part,

because it has long been politically separate. To be sure, the educated urban New Englander or New York City dweller may sound considerably like an educated Londoner, and eastern New England and the "deep South" may have an *r*-system closely resembling that of southern England. But in the main, British flavor is no longer recognizable. And since the immigration quota legislation of 1917–24, even the highly colorful Irish, Scotch, and Welsh, once common in America, have become more and more rare.

The dialect areas of the United States are, then, no longer referable to the class systems or the racial sections of the British Isles. Rather, at long distance, they echo the regional or county speech whence large colonial groups came. That is, speaking roughly, enough people came to the East and South from *r*-loss counties of the south of England to set the stamp of the silent final and preconsonantal *r*—*car* [kɑ:], *card* [kɑ:d], *word* [wɜ:d]—on those areas; and enough people came from the *r*-retaining counties of the North of England and (later) of Ireland and Scotland to set the stamp of *r*-retention—*car* [kɑr], *card* [kɑrd], *word* [wɜ·d]—on the remainder of the country, the so-called general American area.

Other dialects in America are of minor significance and are referable to race (combined with linguistic surroundings and with social, economic, and educational levels), as the Negro dialect; to large homogeneous colonial groupings, as the Pennsylvania German, the Milwaukee German, the French-Canadian of New England, and the Louisiana French, or Cajan, of the Gulf area; to isolation, as the mountain speech of the Appalachians and Ozarks; and to social, economic and educational levels combined with other factors, as New Yorkese.

The history of all these dialects—those of the British Isles from the invasion of the Teutons, and those of British colonization from the discovery of the New World and the period of exploration onward—has been, on the average, one of greater and greater divergence almost to the present time.

But we may now and henceforward expect the tide to change toward greater similarity, what with the present rapidity of transportation, the instantaneity of communication, and the universality of both. Still, for a long time yet, and to some extent, perhaps forever, there will be distinguishable dialects of English.

CHAPTER 3

American Standards of Pronunciation

Concerning the dialects of English, it is inevitable that there should have arisen the question as to which of them all is the correct or standard dialect. The history of the answer to this question has been one of dispute and struggle. In brief, it has involved an initial proposal of a single world standard English, followed by a conflict which, as yet, has ended nowhere for most of the English-speaking world, but which is fairly well settled on a regional basis for the United States and Canada.

Analogy of Other Standard Languages

In this conflict over standard English, there was considerable argument by analogy. Germany had had a standard German, in that the form of high German used on the stage had been widely—and in academic circles, semi-officially—regarded as the best spoken German, and therefore worthy of imitation and of use as a standardizing guide. France had had a standard French, in that the speech of Paris and the Ile de France as a whole had been recognized by the French Academy as standard French, and had been used in standard dictionaries and by widely distributed schools and teachers within France and without. Spain had had a standard Spanish, in that Castilian had been similarly recognized by the Spanish Academy, and had been widely regarded both in Spain and elsewhere as standard Spanish. Norway, in a more official way than any other country, had definitely had a standard Norwegian, called the Landsmaal, a kind of synthetic Norse derived from the various Norwegian dialects by scholarly research and comparison with old Norse.

The Proposed Standard Dialect

The dialect of English selected as a candidate for the position of standard English is usually referred to as southern British, though its pattern is actually set by the educated and upper-class speech in the city of London alone. The prestige of the capital no doubt had a great deal to do with this selection. But there was the added influence of the stage, which throughout the history of the English language has tended to regard London speech as standard. Still further, there was the fact that the great English so-called public schools—Harrow, Rugby, Eton, and a great many less famous ones—had tended to normalize the dialect of the gentlemen's sons attending there, on the basis of London speech. All of these influences toward the designation of London speech as a standard were summarized and crystallized in Daniel Jones' *An English Pronouncing Dictionary*,[1] first issued in 1917, and revised in 1937.

Just as a standard speech has been a distinct advantage in the other small countries already mentioned, so it would be in England. But even within so tiny an area there are active and passive forces of dissension and resistance, some of which have been implied in earlier discussion. For centuries there have been nationalist forces in Ireland, whose antipathy to England has culminated in a division between Catholic and Protestant Ireland; in the establishment in the South of the Irish Free State, later renamed Eire; and in the designation there of Gaelic as the official national language. Nationalistic sentiments are not unknown in Scotland and Wales, and in the latter the native language, Welsh, is much used in the pulpit and at home. In every part of the British Isles there is a tendency to regard the regional speech as the equal, if not the superior, of London speech. Northern British, especially, as spoken by educated people in Northumberland, Cumberland, Westmoreland, and the other coun-

[1] E. P. Dutton & Co., Inc., New York City.

ties immediately south of Scotland, has had strong advocacy as a standard insular speech.

Rise of the Movement in America

The idea of using London speech as the general standard migrated to America in the course of time and began to be well known at about the time the dramatic influences of Antoine in Paris, Reinhardt in Berlin, Stanislavsky in Moscow, Grein in Birmingham, and the Lady Gregory and Yeats in Dublin were transplanted to America under the name of "The Little Theater Movement." As this movement swept across the United States, it carried with it new consciousness of the act of speech. It focused the attention of many people on the then flourishing commercial theater, where, in America as well as in England, the London standard was very nearly the prevalent speech. Many people sought training in diction and found it at the hands of retired actors who had established schools of the theater or who had secured employment in schools already established. Some sought training from phoneticians, among whom were aggressive, determined, and persuasive advocates of the London standard. They sent forth many convinced and enthusiastic disciples, all of whom could transcribe in phonetic notation and many of whom could speak with a fairly good imitation of London speech. These people taught in schools of expression and in public schools, or directed in little theaters, or became active members of culture clubs. Many wrote books, published magazine articles, and spoke at teachers' conventions. More by reason of the personnel, the occupation, and the avocation of these people than by overt intention, their ideas of standard speech became associated with social preference and acceptance, so that many people with social aspirations were impelled to look favorably on the idea of standard English because of its value in securing social recognition.

All told, the various influences in the direction of a standard English in America came, within themselves, to assume something of the proportions of a "movement." There were many earnest crusaders in its favor and some veritable fanatics, to whom the standard English movement amounted to a religion, with *An English Pronouncing Dictionary* as its Bible.

Decline of the Movement

But linguistic history contains no record of any area of colonization which has adhered perfectly to the speech of the mother country. The Afrikaans of South Africa differs from the Dutch of Holland; the Spanish of Central and South America and of the Philippine Islands differs in varying degrees from Castilian; and the French of Canada and of Louisiana contrasts sharply with the French of Paris. It was hardly to be expected that the United States as a whole, or even throughout its academic and cultural circles, would lean in a majority toward the "broad *a*'s" and tapped *r*'s and retracted stresses of the speech of another nation. And so, within the course of twenty to twenty-five years, the movement declined in effective influence.

Despite its controversial and sometimes ridiculous aspects, the standard English movement has done a great deal of good. It has directed attention and energy to the act of speech and has forced those who elected to be its opponents to formulate their own ideas. The result has been a well defined concept of regional speech in the United States, and a statement of reasons for adhering to regional standards rather than to a single, and to some ways of thinking, a foreign, standard.

The problem of standards of speech in the United States is thus detached from the similar problem in England and in other parts of the English-speaking world. The other English countries are thus left to work out their own ideas, as they would do in any event, in view of the normal difficulty of changing the dialect of any large number of people.

Regional Standards

The tendency now is to recognize the three great regional dialects of the United States as correct, each standard in its own area, and each thoroughly acceptable among educated people everywhere. Correct eastern speech is thought of as the speech of the majority of the educated people in the East; correct southern speech, the speech of the majority of the educated people in the South; correct general American speech, as the speech of the majority of the educated people in the remainder of the country.

The Three Regions

The eastern region includes roughly the New England states and the city of New York.[2] The population, including some of the English-speaking people of eastern Canada, is about 15 millions of people. The southern region roughly includes, on the east side of the Mississippi, the states south of the Potomac River, south of the state of West Virginia, and south of the Ohio River; on the west side, lowland Arkansas, nearly all of Louisiana, and the southeast corner of Texas. The population is about 30 millions, of which about 22 millions are white. The general American region begins roughly at the Connecticut River and includes all of the United States west and north of the boundary indicated for the other regions. The population, including that of central and western Canada, is about 90 millions.

Canadian English

In Canada the speech of the Province of Quebec is predominantly French. But, as implied in the preceding paragraph, east of Quebec, the Canadian speech may be loosely related to that of New England; and west of Quebec, to that of the general American area.

[2] There is difference of opinion as to where to place New York City, since some of its speech characteristics resemble those of the East; some, those of the South; and some, those of no other area anywhere. It is thus possible to think of New York City as eastern, southern, or separate and independent.

Substandard Regional Speech

In each of the three great areas of North America, there is a substandard speech used by the uneducated or the careless. In all cities and in some rural areas, there is a considerable amount of broken English, likewise substandard, spoken by immigrants or their partially unassimilated descendants. It is one of the first duties of speech teachers to lend every effort to the motivation and assistance needed to bring substandard speakers away from their imperfections and nearer to the standard speech of the area in which they live.

Which American Dialect Will Prevail?

The question is often asked whether one or another of the American regional dialects will prevail over the rest. The answer is, of necessity, speculative. We may say, however, that since there is no longer a frontier on the West, but rather a frontier characterized by undeveloped lands and other resources in the South, and another frontier of professional opportunity in the cities of the East, the turn of the population is now likely to be southward and eastward rather than westward. The recent actual decrease in population in North Dakota, South Dakota, Kansas, Nebraska, and Oklahoma, as shown by the 1940 census, tends to substantiate this speculation. The census also shows that the center of population for the United States has moved eastward from Kansas to Ohio. If the general American population moves toward the East and the South, the general American speech will tend to penetrate, infiltrate, and dilute eastern and southern speech. Nonstatistical observation on the part of many people seems to show that this is taking place.

Then, too, as it is almost needless to say, the incessant speaking on the radio and listening to the radio will inevitably have some effect on the speech of the listeners. The very pressure of numerically superior population in the general American area is placing general American speech in

great prominence on the radio. The same can be said as to motion pictures, where, for reasons which will be touched upon later, the general American speech is used in large proportion. However, the change of any dialect is a slow process, and we may expect the dialects of the three regions to be distinguishable from each for a long time to come. Speech teaching, therefore, will need to recognize and accept these conditions and be governed accordingly.

Summary

We may summarize the point of view taken in this discussion by saying that for the current years in the United States, regional standards are likely to prevail.[3] Speech teaching, instead of trying the impossible task of moving the pronunciation of a whole population toward the dialect of some very small area, will busy itself with the improvement of the speech of the various regions, continually aiding those who use substandard regional speech to achieve the level of standard regional speech. By reason of increasing mobility of intermingling populations, of unbelievably rapid means of transportation, and of increasing rapidity of communication up to the very speed of light, it may be expected that regional differences will now tend to decrease rather than to increase. The tremendous numerical preponderance of the general American speech will give it an advantage over eastern speech and southern speech in this process of blending toward a homogeneous American speech. Against this numerical advantage will be pitted (a) the influence of old, thickly populated, socially prominent urban centers in the East and South; (b) the poverty of the southern Negro population and the city slum population, which militates against mobility and against the full effectiveness of education and communication; and (c) racial and national preju-

[3] For detailed outline of the sound systems of eastern, southern and general American speech, see G. W. Gray and C. M. Wise, *The Bases of Speech*, Harper & Brothers (New York, 1945).

dices affecting Negroes, Mexicans, southern and central Europeans, and Orientals, completely or partially preventing their assimilation into the surrounding population. The English-speaking parts of Canada will relate themselves to the adjacent parts of the United States.

Trends in the English-Speaking World

In other sections of the English-speaking world, the same general processes will likely take place. In Australia and South Africa, for instance, education will tend to bring the substandard speech of a given region up toward the level of the educated people of that region, and the increasing rapidity of transportation and communication will tend to blend all the regions in the direction of homogeneity.

This blending toward homogeneity in geographical units will take place more slowly in the British Isles than anywhere else, because the differences are greater there, and the precedents established by history, tradition, politics, and social stratification are stronger influences there than in any other section of the English-speaking world.

In the end, what with the influences already referred to as adhering to education, transportation, and communication, the whole English-speaking world may be expected to move slowly toward a common speech. But this will not be through a process of adopting the speech of some given area. Rather, it will be through the recognition of alternative pronunciations of a number of words, such as *schedule* [skɛdʒul, ʃɛdʒul], or of different classes of words, as in the broad *a* class—*fast* [fæst, fast, fɑst], *France* [frænts, frants, frɑnts]. So it will be with words where there is a choice between a system of primary and secondary accents and of retracted primary accent only, such as *dictionary* [ˈdɪkʃənˌɛrɪ, ˈdɪkʃənərɪ], *confectionery* [kənˈfɛkʃəˌnɛrɪ, kənˈfɛkʃənərɪ]. As an alternative to the recognition of more than one pronunciation for a given word, there may be a tendency to drop one pronunciation in favor of another. The pronunciation of *drama* as [dræmə] appears, for example, to be much less common

than a few years ago; [dramə] seems to be prevailing. On the other hand, a considerable number of British actors and actresses in America are dropping the broad *a*. The theater, as one of the means of communication referred to previously, offers an uncommonly effective place for comparing pronunciation, and, because of its universality, it could be one of the most powerful forces in inducing homogeneity.

In the preceding discussion, the point of view has been definitely expressed that for everyday uses in America, standard regional speech is preferable to a single standard speech, especially a speech spoken by a relatively small group in a distant country. The following may seem to be in some measure a contradiction of this point of view.

Stage Speech

On the professional and semi-professional stage, a single standard of English is often necessary. This necessity becomes apparent when we consider the personnel of the actors on the stage. The actors on the professional stage (the reference here is to the so-called legitimate stage rather than to the motion pictures) and on the semi-professional stage (the larger civic theaters and the great university theaters) are drawn from every quarter of English-speaking America and often from other parts of the English-speaking world. Their native dialects are as various as the places from which they come. Often they are cast in plays where considerable numbers of the characters are members of a single family, or residents of a homogeneous neighborhood. Obviously these characters would use a homogeneous speech. Any presentation where such characters are represented as speaking radically different dialects will naturally attract unfavorable attention. It follows that it is necessary for the professional and semi-professional stage to adopt some dialect which may be used as a norm when the native dialects of the actors will not serve.

The theater has, in the course of its history, made its own selection of dialect. The American theater is, of course, an offshoot of the English theater. In the English theater the dialect of educated London has long been used as the standard stage speech. The first British companies that came to America naturally used that speech more than any other. American actors who joined with them learned it also, deliberately or unconsciously. Teachers in theatrical schools have always taught it, and, so far as the professional theater is concerned, this speech has become well established. It is used for Shakespearean plays as a matter of course. It is also used for eighteenth and nineteenth century plays and for modern British plays. It serves conveniently for Greek plays, for other classic plays, and for translations from modern European plays. Quite often modern American plays, especially if the locale is eastern, or if the place is not clearly defined at all, are rendered in stage speech.

It is obvious that this speech cannot be slavishly used when it is inappropriate. In any play whatever, there is likely to be a Negro servant, a Swedish maid, an Irish comedian, a Cockney butler, or some other character different from the characters making up the major part of the list. Those who play these characters must necessarily speak appropriate dialects. Plays often have a locale so highly individual that the speech of an entire play has to be adapted to the situation. Plays of the Irish theater, Negro plays, mountain plays, plays in Louisiana-French dialect, and many others are cases in point. But freely admitting all these necessary variations, the need for a single basic dialect is still very strong, and the usefulness of such a dialect is very great.

Speech in the Motion Pictures

The motion picture stands somewhat by itself in respect to stage speech. This condition is an outgrowth of its history. When motion pictures were silent pictures, no speech at all was necessary. The fact that motion pictures were

made in the western part of the United States tended to draw large numbers of speakers of the general American dialect into the motion-picture industry. When the pictures suddenly began to talk, the actors, many of whom had no vocal talent or training whatever, went frantically to teachers to be prepared for the microphone. These actors usually had little or no consciousness of a special stage dialect and most of their teachers had none. More to the point, their directors had none. The result was that while such actors as were capable of sounding in some measure agreeable had their utterance polished up to where they could carry on, the polishing was usually on voice quality, enunciation, and projection, rather than on dialect. The end result was a great preponderance of general American speech on the part of motion-picture actors. As time went on, this was modified considerably, because (a) English actors and well-trained New York actors were attracted to the motion-picture stage by its financial rewards; (b) the literature used became improved by wider selection, compassing Shakespearean plays and other classic plays, modern British and American plays, translated plays and the like; and (c) better directors were chosen, who knew that there were such things as problems of dialect. This combination of actors, plays, and directors has produced a considerable number of motion pictures done in a speech as close to stage tradition as any on the ordinary stage. At the present time the tendency in motion pictures is toward the more frequent use of stage speech.[4]

Professional Interpretative Reading

In the earlier days of the lyceum, the lecture course, the Chautauqua, and similar institutions, there were many interpretative readers; and the demands on their speech were comparable to the demands on the speech of a good actor.

[4] For a detailed account of stage speech, see G. W. Gray and C. M. Wise, *op. cit.*, Chapter IV. The standard reference for the pronunciation of individual words in stage speech is Daniel Jones, *English Pronouncing Dictionary*.

There are fewer such artists in these days, but still there are some. Those whose work takes them across the length and breadth of the country usually use stage speech in about the same way as we have just described for the stage itself.

Speech on the Radio

In the earlier days of the radio, there was some tendency toward training announcers to use stage speech. That tendency has largely subsided, and stage speech is seldom heard now over the radio except when actors or interpreters who are trained in it are used as radio performers.

Speech for School and Community Drama

As a corollary to what has been said about speech in drama, it should be added that when a play is given by a purely local group, such as a church group, a high school group, or a small civic group, there is very much less need for a standard dialect than in professional and semi-professional circles. In fact, it is far better in such cases to do the play instead in the very best speech of the region in which the actors live. Most school and community groups will have as much as they can do to improve the less perfect speech of some members of the cast in the direction of a more perfect regional speech, without undertaking a complete change to an almost unknown dialect. But such relatively untrained groups, however, must bear in mind that almost any play they produce may contain some character speaking a highly individual or provincial English, or one or another of the types of broken English spoken by foreigners who have learned our language. Such characters must be represented by an approximation as close as possible to the speech the characters would actually use, and not by the local speech of the community where the play is given.

Interpretative readers who do not travel about, but who read only for local groups, may likewise use the speech of their own regions to excellent effect. But they, too, if they

undertake to do interpretations in dialect, will need to acquire some facility in Irish, Scotch, Norwegian, Italian, or other dialects.

Summary

In summary, it may be said of the speech of the stage and of the platform that the actor, interpretative reader, and director should be conscious of the problem of dialect, should think the problem through wisely, and in each instance should make a choice on the basis of all of the merits of the given case. This will include a consideration of the play itself, with its authorship, locale, and cast of characters. It will include also a consideration of whether the theater and its players are professional or semi-professional, or are a school or community group whose membership is limited to a single neighborhood.

CHAPTER 4

Pronunciation and Phonetics

This chapter is designed to aid beginning speech students in learning the sounds of speech and to sensitize them to the problems of good pronunciation. It limits itself to such elementary material as is applicable to a fundamental speech course. Certain familiar consonants are used as a base, and the vowels are introduced one at a time. Words are formed, discussed, and transcribed, a given exercise using only one new sound and the already familiar consonants. Other sounds are then added one by one, and, at the same time, those previously introduced are kept before the student through exercises and reviews. The more difficult sounds are withheld until the easier ones are well learned.

In fixing speech habits, the most carefully planned and perfectly comprehended lessons can never take the place of constant drill. Neurograms fade with disuse; therefore students and teachers need to supplement the suggestions of this chapter with much oral activity. The forms of oral activity, aside from the transcription and pronunciation lists herein, are left to the discretion of the teacher.

In accordance with the point of view expressed in the preceding chapters, this chapter undertakes to promote the three acceptable forms of standard speech in the United States: standard eastern, standard southern, and standard general American. Since these three forms meet and blend along very lengthy borders, comparisons are often made referring to all three, with occasional references extending to British English.

This chapter frequently touches upon the speech errors of given areas. Teachers and students will often recognize in the transcription lists types of words which are widely mis-

pronounced by poor speakers in various quarters. It is suggested that one of two procedures may be followed when such problems are encountered: (1) to dispose of the matter at issue with the greatest possible brevity, and reserve full discussion and drill until a later time; or (2) to use in a supplementary way such material as is necessary,[1] and treat the problem fully before proceeding. The exigencies of a given occasion or situation may well govern the choice between the two alternatives.

In order to deal intelligibly with the phonetic approach to speech study, it is first necessary to establish a vocabulary covering the most essential phonetic nomenclatures and concepts.

Phonetic Nomenclatures and Concepts

Phonetics

The word phonetics is commonly used in two senses, referring (a) to a science, and (b) to a system of symbols. In the first sense, we say that phonetics is the science of speech sounds; and in the second, that words written in phonetic symbols are written in phonetics.

The phonetic alphabet

The alphabets of most languages are very imperfect instruments, unsuitable for scientific work. Their imperfections lie in two particulars: (a) one letter or combination of letters may represent more than one sound, as *ea* in *pleasure, mead, heard, beard, sergeant*; or *oe* in *does, hoes, shoes*; or *c* in *civil, code, social*; and (b) one sound may be represented by more than one letter or combination, as the vowel [ɪ] in *it, busy, bicycle, women*; or the consonant [k] in *Karl, cope, chorus, quay*; or the consonant [ʃ] in *show, social, action, chaise*. English is particularly handicapped with

[1] For books containing such material, see G. W. Gray and C. M. Wise *The Bases of Speech* (New York: Harper & Brothers, 1945).

ambiguities like these, French almost as much, German somewhat less, Spanish, Italian, and Norwegian still less. Only languages which have adopted an alphabet relatively lately, like Hungarian, are more free from such troublesome difficulties. In English, the inconsistencies of spelling are so glaring that foreigners have the greatest difficulty in pronouncing the language, and even those whose native tongue is English are often very uncertain. So common a word as *card* may be heard in as many as five pronunciations.

Obviously, for scientific studies, a more stable alphabet is necessary. Speaking quite broadly, and, for the moment, entirely without scientific accuracy, such an alphabet should have one symbol and one only for each speech sound. This ideal is sometimes expressed thus: One sound per symbol; one symbol per sound.

There have been many phonetic alphabets devised. The one most used and now predominant in the field is the I.P.A., or International Phonetic Alphabet. There is a copy of this alphabet on the opposite page, containing the symbols not merely for English sounds, but for most foreign sounds. The two symbols [ɝ] and [ɚ], representing sounds peculiarly American, have been added.

Most of the terms in the I.P.A. table are self-explanatory. Each term indicates one of two things: (a) the position of the articulatory organs in making the sounds, or (b) the manner of the sound-making itself. The terms across the top of the page belong to the former class, those on the left margin to the latter.

Making English sounds

Everyone has some notion, and usually thinks he knows accurately, how to make the vowel and consonant sounds. But this knowledge is often very inaccurate. Many who think they are making [g] and [k] really always make [d] and [t] in *glass* and *class*, so that they pronounce the words *dlass* and *tlass*. Others err in the placement of the vowel and say *min* and *tin* for *men* and *ten*; or, by an opposite error,

THE INTERNATIONAL PHONETIC ALPHABET

		Bi-labial	*Labio-dental*	*Dental and Alveolar*	*Retroflex*	*Palato-alveolar*	*Alveolo-palatal*	*Palatal*	*Velar*	*Uvular*	*Pharyngal*	*Glottal*
CONSONANTS	*Plosive*	p b		t d	ʈ ɖ			c ɟ	k g	q ɢ		ʔ
	Nasal	m	ɱ	n	ɳ			ɲ	ŋ	ɴ		
	Lateral Fricative			ɬ ɮ								
	Lateral Non-fricative			l	ɭ			ʎ				
	Rolled			r						ʀ		
	Flapped			ɾ	ɽ					ʀ		
	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)	ʁ		

		Front	*Central*	*Back*
VOWELS	*Close*	i y	ɨ ʉ	ɯ u
		ɪ ʏ		ʊ
	Half-close	e ø		ɤ o
			ɘ ɞ	
	Half-open	ɛ œ	ɜ ɜ˞	ʌ ɔ
		æ	ɐ	
	Open		a	ɑ ɒ

(Secondary articulations are shown by symbols in brackets.)

OTHER SOUNDS.—Palatalized consonants: t̠, d̠, etc. Velarized or pharyngalized consonants: ɬ, ɖ, ʂ, etc. Ejective consonants (plosives with simultaneous glottal stop): p', t', etc. Implosive voiced consonants: ɓ, ɗ, etc. r̆ fricative trill. ʊ, ɻ (labialized 0, ð, or s, z). ɥ, ʒ (labialized ʃ, ʒ). ʇ, ʗ, ʖ (clicks, Zulu *c*, *q*, *x*). ɺ (a sound between ɾ and l). ʍ (voiceless w). ɪ, ʏ, ʊ (lowered varieties of i, y, u). ɜ (a variety of ə). ɵ (a vowel between ø and o).

Affricates are normally represented by groups of two consonants (ts, tʃ, dʒ, etc.), but, when necessary, ligatures are used (t͡s, t͡ʃ, d͡ʒ, etc.), or the marks ‿ or ‿ (fs or t͡s, etc.). c, ɟ may occasionally be used in place of tʃ, dʒ. Aspirated plosives: ph, th, etc.

LENGTH, STRESS, PITCH.—ː (full length). ˑ (half length). ˈ (stress, placed at beginning of the stressed syllable). ˌ (secondary stress). ˉ (high level pitch); ˍ (low level); ˊ (high rising); ˏ (low rising); ˋ (high falling); ˎ (low falling); ˆ (rise-fall); ˇ (fall-rise). See *Ecriture phonétique internationale*, p. 9.

MODIFIERS.—˜ nasality. ˌ breath (ɬ̥ = breathed l). ˬ voice (ʂ̬ = z). ʻ slight aspiration following p, t, etc. ˌ specially close vowel (e̞ = a very close e). ˌ specially open vowel (e̯ = a rather open e). ̲ labialization (n̪ = labialized n). ̪ dental articulation (t̪ = dental t). ʲ palatalization (ż = ʐ). ˠ tongue slightly raised. ˞ tongue slightly lowered. ʷ lips more rounded. ʸ lips more spread. Central vowels ï (= i), ü (= ʉ), ë (= ɘˠ), ö (= ɵ), ɛ̈, ɔ̈. ̩ (e.g. n̩) syllabic consonant. ̯ consonantal vowel. ʃˢ variety of ʃ resembling s, etc.

N.B.—The symbols [ɜ˞] and [ɜ˞] have been added for American use.

Courtesy of Mergenthaler Linotype Company.

they say *sence* for *since*. It is therefore continually necessary to aid people in correctness by explaining how the sounds are really made.

A common way to explain the values of phonetic symbols is by the use of key words. This practice may be helpful or misleading, according to whether the individual reading the key words pronounces the sounds contained in them with values approaching the values given to the symbols by phoneticians on the basis of average pronunciation. For many people use other values, according to regional custom or individual idiosyncrasy, as was suggested in the mention of the word *men* in the last paragraph.

Nevertheless, in the explanations later, key words will be used for whatever help they may give. But the reader is warned not to depend upon them, unless he can determine positively that the positions his vocal organs assume in pronouncing each sound agree with those described with the aid of the consonant tabulation and the vowel diagram immediately following the list of key words. Only the chart and the diagram can invariably be trusted.

Pending more accurate discussion later, the phonetic symbols used here may be interpreted as follows:

1. ˌ — beneath a consonant makes it a syllable.
2. ː — lengthening signs.
3. ~ — sign of nasalization.
4. [a] — *a* as the first sound of diphthong [aɪ] in *fine* [faɪn].
5. [aɪ] — *i* in *fine* [faɪn].
6. [aʊ] — *ow* in *cow* [kaʊ].
7. [ɑ] — *a* in *balm* [bɑm] and *o* in American *hot* [hɑt].
8. [ɒ] — *o* in British *hot* [hɒt].
9. [æ] — *a* in *hat* [hæt].
10. [b] — *b* in *bit* [bɪt].
11. [d] — *d* in *deem* [dim].
12. [dʒ] — *j* in *jump* [dʒʌmp], *g* in *gem* [dʒem].
13. [e] — lightly stressed *a* in *chaotic* [keɑtɪk].
14. [eɪ] — *a* strongly stressed in *date* [deɪt].
15. [ə] — *a* in *soda* [soudə]—always unstressed.
16. [ɚ] — *er* unstressed as in general American *mother* [mʌðɚ].
17. [ɛ] — *e* in *yes* [jɛs].

18. [ɜ:] — British, southern, and eastern *ir* in *bird* [bɜ:d].
19. [ɝ] — general American *ir* in *bird* [bɝd].
20. [f] — *f* in *fall* [fɔl].
21. [g] — *g* in *gone* [gɔn].
22. [h] — *h* in *his* [hɪz].
23. [i] — *ee* in *deem* [dim].
24. [ɪ] — *i* in *bit* [bɪt].
25. [j] — *y* in *yell* [jɛl].
26. [k] — *k* in *king* [kɪŋ].
27. [l] — *l* in *fall* [fɔl].
28. [m] — *m* in *deem* [dim].
29. [n] — *n* in *fine* [faɪn].
30. [ŋ] — *ng* in *sing* [sɪŋ].
31. [o] — lightly stressed *o* in *obey* [obeɪ].
32. [oʊ] — strongly stressed *o* in *note* [noʊt].
33. [ɔ] — *a* in *hawk* [hɔk].
34. [ɔɪ] — *oy* in *boy* [bɔɪ].
35. [p] — *p* in *pin* [pɪn].
36. [r] — *r* in *ring* [rɪŋ].
37. [ɾ] — *r* as the one-tap trill in British *very* [vɛɾɪ].
38. [ɹ] — *r* frictative in *dry* [dɹaɪ].
39. [s] — *s* in *sing* [sɪŋ].
40. [ʃ] — *sh* in *show* [ʃoʊ].
41. [t] — *t* in *bit* [bɪt].
42. [tʃ] — *ch* in *chalk* [tʃɔk].
43. [θ] — *th* in *thing* [θɪŋ].
44. [ð] — *th* in *this* [ðɪs].
45. [u] — *oo* in *pool* [pul].
46. [ju] — *u* in *imbue* [ɪmbju].
47. [ʊ] — *oo* in *foot* [fʊt].
48. [ʌ] — *u* in *up* [ʌp] always stressed.
49. [v] — *v* in *vine* [vaɪn].
50. [w] — *w* in *we* [wi].
51. [ʍ] — *wh* in *when* [ʍɛn].
52. [z] — *s* in *his* [hɪz].
53. [ʒ] — *s* in *vision* [vɪʒən].

The cardinal vowel diagram

The best scheme yet devised for explaining graphically the position of the tongue in producing vowels is the cardinal vowel diagram. This diagram follows with the English vowel system written upon it. The cardinal vowel

diagram is to be interpreted thus: The position of [i] at the upper left-hand corner indicates that cardinal [i] is pronounced with the tongue as high and as far front in the mouth as possible; cardinal [a] with the tongue as low and as far front as possible; cardinal [ɑ] with the tongue as low and as far back as possible; and cardinal [u] with the tongue as high and as far back as possible.

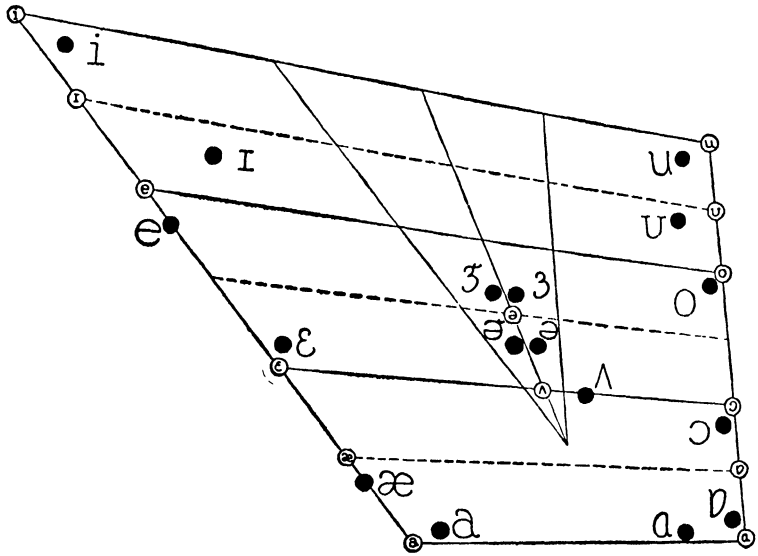

Fig. 1. Cardinal Vowel Diagram. Circles indicate the positions of cardinal vowels; black dots indicate the positions of the English vowels as spoken by the maker of this diagram.

Cardinal [ɪ], [e], [ɛ], and [æ] are all made with the tongue front, and with the jaw and tongue dropping progressively by one or two equal units of distance from [i] through [ɪ], [e], [ɛ] and [æ] to [a]. Cardinal [ɒ], [ɔ], [o], and [ʊ] are made with the tongue back, and with the tongue and jaw rising progressively by one or two equal units of distance from [ɑ] through [ɒ], [ɔ], [o], and [ʊ] to [u]. Cardinal [ʌ], [ɜ], [ɞ], [ə], and [ɤ] are medial, made with the tongue and jaw raised the indicated distances from low toward high. The cardinal vowels must not be mistaken for the regular vowels.

They are, instead, vowels made at arbitrary positions, so that they will be identical for all persons and, therefore, suitable as points of reference. With such points of reference established, English vowels, and, for that matter, all vowels, can be described as higher, lower, farther front or farther back than the corresponding cardinal vowels.

The phoneme

It has been said that the notion of one sound per symbol and one symbol per sound, while convenient to beginners, is inaccurate. The more accurate statement is: One symbol per phoneme. A phoneme may be defined most simply as a sound family. One of the sound families, the [t] family, may be noted in the following series: *rate, eighth, cattle, mutton.* Each of these [t]'s is made in a different way, yet each is recognizable as a [t], and so belongs to the [t] phoneme. Phonemes differ for different people, and for different languages. Thus, in Italian, the [n] in *hanno* [anːo] and the [ŋ] in *cinque* [tʃiŋkwe] belong to the same phoneme, the [n] phoneme, whereas in English they belong to two separate phonemes, the [n] phoneme and the [ŋ] phoneme. Conversely, in English, the [h] in *hand* [hænd], and the [ç] in *human* [çumən] both belong to the [h] phoneme, whereas in German they belong to two separate phonemes, the [h] phoneme and the [ç] phoneme. The beginning student is not expected to grasp at once the phoneme theory in its entirety. For the time, the key-word system appears to serve him better.

Voicing and unvoicing

The term voiced, used to describe a sound, means that the vocal bands are vibrating during the pronunciation of the sound. Voiceless means that the vocal bands are quiescent.

Aspiration and unaspiration

The term aspiration is used to indicate the English peculiarity of producing a puff of air, like an [h], just after [p],

[t], and [k], contrary to the practice in South German and, to a lesser extent, in the Romance languages. And the term unaspirated is used to indicate the English manner of gliding from the voiced component of [b], [d], and [g] directly into the following vowel without an appreciable puff or plosion.

Sonority

Sonority is the force with which tones affect the sense of hearing. Voiced sounds are sonorous; voiceless ones non-sonorous; open sounds are more sonorous than close or impeded ones. Vowels and vowel-like consonants are strongly sonorous.

Speech tones

The term speech tone is sometimes used in an arbitrary way to designate those sounds of speech which are made by periodic or regular vibrations. Speech tones are relatively sonorous.

Speech noises

The term speech noise designates those sounds of speech which are non-periodic, that is, produced by irregular vibrations. The voiceless and fricative consonants contain speech noises. Speech noise is thought of as the opposite of sonority.

The syllable

The syllable cannot be defined simply. For the present elementary purpose, it may be thought of as a word or division of a word containing a peak of sonority and separated from adjacent words or divisions by low points of sonority, ranging from zero (complete silence or hiatus) upward.

Continuants

A continuant is a speech sound that may be voluntarily continued as long as the breath supply lasts. All vowels are continuants; the consonants [m, n, ŋ, f, v, θ, ð, ʃ, ʒ s, z, l, r] are continuants.

Consonants

The word consonant was originally evolved from *con*, meaning "with," and *sonare*, "to sound." The name implied a sound capable of being pronounced only with another sound, that is, with a vowel. This early conception of a consonant does not hold, of course, for all consonants can be sounded alone, and some, as [m], [l], and [z], are as easily sounded alone as vowels. In fact, syllabic consonants are very common, as in *battle* [bæt|] and *button* [bʌtn̩]. The name consonant has survived, but it can no longer be taken in its root meaning.

Certain terms are necessary to a full discussion of consonants. Some of these follow.

Stops

In point of capacity for duration, a stop is the opposite of a continuant. A stop might better be called a stop-plosive. It might even be called a stop-compression-plosive. Such a speech element has, if voiceless, three actions or events in its production, arranged in sequence. These are, in order: (1) closing the articulatory dam, or implosion; (2) building up air pressure behind this dam, or compression; (3) opening the dam and permitting the escape of the compressed air, or explosion. (See the production of [p], page 82.) If the speech element is voiced, a fourth event takes place simultaneously with events (2) and (3); namely, the vibration of the vocal bands. (See the production of [b], page 84.) The explosion of a plosive can be omitted entirely, as in the pronunciation of [b] in *tub* without opening the lips at the end of the word. We may call such a [b] an imploded [b]. (See paragraphs on [t, d, k, g], pages 85–90.)

Long consonants

A long consonant, if a plosive, differs from a short consonant in having its second event, the compression, continued longer, with the plosion correspondingly delayed; for example, cattails [kæt:eɪlz]. The sign of a long consonant is the

colon [ː]. If the long consonant is a continuant, it is simply attenuated, or drawn out; for example, *same man* [seɪmːæn].

Phonetically long consonants, produced by the juxtaposition of one word ending and another beginning with the same consonant sound, are to be distinguished from orthographically doubled consonants. Compare *some mice* [sʌmːaɪs] with *summoned* [sʌmənd]. Orthographically doubled consonants within a word are short, phonetically; for example, *command* [kəmænd], *cotton* [kɑtn̩, kɒtn̩].

Nasals

A nasal consonant is one that is resonated in part in the nasal cavity, through which the air escapes in phonation. [m, n, ŋ] are the English nasals. English vowels should not be audibly nasal, though the velum frequently permits the escape of some air through the nose.

Labials

Labial consonants are those articulated by closing or rounding the lips. As the I.P.A. table shows, these are [p, b, m, w, ʍ] in English.

Labiodentals

Labiodental consonants are articulated with the upper teeth resting lightly on the lower lip. The English labiodentals are [f, v].

Laterals

A lateral consonant is made by permitting the exit of the breath stream at one or both sides of the tongue. [l] is the outstanding example. [t] or [d] before [l] may be exploded laterally.

Trills

A trilled consonant is made by vibrating the tongue-tip or the uvula. Neither kind of trill is prominent in English, though [r] is sometimes trilled slightly with the tongue in song or oratory, when it occurs alone, or with another conso-

nant, at the beginning of a syllable. The I.P.A. uses "rolled" to mean trilled. In eastern and British English the linking *r*, [r], is pronounced with one tap of the tongue. I.P.A. calls this sound "flapped."

Dentals and alveolars

The term alveolar better describes the English consonants, the analogs of which, in most other languages, are really dental. These consonants are [t, d, n, l]. Except in unusual instances, the tongue does not touch the teeth in making these sounds in English, but touches back of the teeth on the gum ridge or alveolar space. By definition, a dental is made with the tongue touching the upper teeth; an alveolar, with the tongue touching just back of the upper teeth.

Interdentals

A true interdental would have to be made with the tongue between the upper and lower teeth. [θ, ð] are often described as interdentals. In point of fact, most speakers of English make [θ] and [ð] with the tongue merely touching the backs of the upper teeth. The sounds are, then, usually strongly dental rather than interdental.

Sibilants

Sibilants are hissing sounds. [s] and [z] are the best examples; [ʃ] and [ʒ] adhere rather faultily to the class.

Fricatives

Fricatives are sounds made partly by friction of air against the articulatory mechanism. The sibilants, labiodentals, interdentals, and palatals are fricatives. The complete list includes [f, v, s, z, θ, ð, ʃ, ʒ, h] and certain forms of [r], as after [t] and [d].

Affricates

An affricate is made of a plosive followed by a fricative. Examples in English are [tʃ] and [dʒ].

Linking sounds

A linking or liaison sound is a sound phonetically convenient as a bridge between two other sounds. Sometimes it is indicated in the spelling, as the *r* in *very* [vɛrɪ], the *r* in *there is* [ðɛrɪz], and the *p* in *Thompson* [tʌmpsən, tɒmpsən]. Sometimes it is not indicated in the spelling, but is tolerated when it appears as an excrescent, as the [t] in *since* [sɪnts], the [p] in *Thomson* [tʌmpsən, tɒmpsən] and the [t] in *bunch* [bʌntʃ]; sometimes it is not tolerated when it appears as an excrescent, as the [r] in *the idea of it* [ðɪ aɪdɪər ɑv ɪt].

Palatals

A palatal is a sound made by some part of the tongue back of the tip approaching the hard palate so as to force the air to pass through a narrow opening. [j, ʃ, ʒ] are palatals.

Velars

The term velar applies to back consonants, such as [g], [k], and [ŋ].

Pure consonants

Nowadays, we think of a pure consonant as possessing no sound except speech noise; that is, the non-sonorous or non-musical sound resulting from the friction of air on the lips, teeth, hard palate, soft palate, tongue, or glottis. Speaking thus strictly, only voiceless consonants—those made without vibration of the vocal bands (glottal vibration, laryngeal vibration)—are pure consonants.

Vowels

At an opposite extreme of sonority or tonal quality are those sounds commonly called vowels. These are made with free vibration of the vocal bands, and are therefore fully voiced. They have no fricative noise, but are to a greater or lesser degree open and resonant.

Consonants having sonority

Between these two extremes lie all the other speech sounds, conventionally classified as consonants; but each is a mixture of vowel and consonant—that is, of speech noise and musical sound. Most of these mixed sounds are really more vowel than consonant.

A rough arrangement of the sounds of English in the order of sonority follows. This arrangement is by classes; within a given class there is no attempt to distinguish relative sonority.

1. More or less completely sonorous—no speech noise:
   The vowels—[i, ɪ, e, ɛ, æ, a, ɑ, ɒ, ɔ, o, ʊ, u, ʌ, ɜ, ɝ, ɚ, ə]. The so-called semi-vowels—[w, j].

2. Almost as completely sonorous, with more vowel quality than consonant quality:
   The nasals [m, n, ŋ].
   The lateral [l].
   The non-fricative [r].
   The trilled [r, ɾ].

3. Mixed in vowel and consonantal quality:
   The voiced plosives [b, d, g].
   The voiced fricatives [v, ð, z, ɹ, ʒ].

4. Purely consonantal, having no sonority, but only noise:
   The voiceless plosives [p, t, k].
   The voiceless fricatives [f, θ, s, ʃ, ʍ, h].

In the discussion of consonants, it is impossible, without too great wordiness, to use names that completely cover the ground. For instance, [p], more completely described than usual, would have to be called something like a labial-stop, velar-block, open-glottis, expiration-muscle-contraction, labial plosive. It seems necessary to use shorter, only partially descriptive names. Moreover, not all of the events possible in the production of a consonant happen invariably, as will occasionally be noted later.

Phonetic Sounds and Symbols, Introduced Progressively

Many consonants have the same phonetic symbol in I.P.A. as they do in English orthographics.[2] The following are examples of orthographic and phonetic consonants which are represented by identical symbols.

Orthographic symbols	*Phonetic symbols*
p as in *put*	[p]
b as in *bit*	[b]
t as in *too*	[t]
d as in *do*	[d]
k[3] as in *Kansas*	[k]
g as in *go*	[g]
f as in *fall*	[f]
v as in *vine*	[v]
s as in *see*	[s]
z as in *buzz*	[z]
l as in *look*	[l]
r[4] as in *run*	[r]
m as in *man*	[m]
n as in *noon*	[n]
h as in *he*	[h]
w as in *will*	[w]

Obviously, the student will not need to learn these symbols; he will know them already. There is a sufficient number of them for use in the transcription of a great many words. Only these consonant symbols, and only words which may be spelled by using them, will be employed for a time in the following pages. Meantime, the vowel sounds will be presented one at a time.

The first sets of sounds now to be introduced and discussed will be the vowels on the Cardinal Vowel Chart, page 29.

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[2] That is, in general, the values implied by the orthographics are the same as those designated by phonetic symbols. There are exceptions, as the case of *s* in *sugar*, *p* in *philosophy*, *t* in *action*, *g* in *gem*, and so on.

[3] Orthographic *c* is either [k] or [s].

[4] Initially in word or syllable, alone or in combination.

Vowels

For each of the English vowels, the velum is closed,[5] preventing the exit of air through the nose; and a vocalized breath stream passes through a given oral aperture. The formation of the mouth-mold for each vowel will be described by explaining the positions of the various movable parts of the mouth. For reasons which will develop later in the discussion (page 55 et seq.), [e], [a], [o], and [ɒ] will be withheld until the last.

[i]

beat—[bit]

The sound [i] is high-front, tense, unround. That is, [i] is produced with the tongue arched high in the front of the mouth; the sides of the tongue lie against the inner surface of the upper teeth, leaving a horizontally wide, but vertically narrow, opening over the top of the tongue for the passage of the air stream. The tongue maintains contact bilaterally with both rows of upper molars. The glossal or tongue muscles, together with many other related muscles, are tense; the lips are open but unround.

Spelling of [i] words: *ae* as in *Caesar*; *ay* as in *quay*; *ea* as in *beat*; *e* as in *me*; *ee* as in *seem*; *ei* as in *either*;[6] *eo* as in *people*; *ey* as in *key*; *i* as in *machine*; *ie* as in *relief*; *oe* as in *Phoebe*.

The sound [i] is often used instead of [ɪ] by foreigners. (See following section on [ɪ] for correction of this error.)

In New York City [i] is sometimes erroneously diphthongized by the prefixing of an on-glide, consisting of [ɛ] or [e]. This error occurs usually in monosyllables or final accented syllables, as *three* [θrɛi, θrei], *me* [mɛi, mei], *degree* [dɪgrɛi, dɪgrei].

When [i] is unstressed in rapid speech, it usually becomes

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[5] That is, closed entirely, or almost entirely, preventing all or nearly all exit of breath through the nose. See G. Oscar Russell, *Speech and Voice*, Chapter IV. Columbus: Ohio State University Press, 1928.

[6] *Either* and *neither* are frequently pronounced [aɪðə, naɪðə] in the East and in England. Both [i] and [aɪ] are standard pronunciations.

either a very short form of itself, or [ɪ]. Example, *create* [kriɪt, krɪɪt]. (See p. 79 on unstressing.)

Transcribe:[7] be, bead, beak, beam, bean, beast, bleed, quay, leave, gleam, grief, grieve, clique, east, seize, keen, glee, geese, key, keen, see, seek, seat, freak, kneel, niece, treat, tepee, tree, we, me, free, sea, weed, peat, keel, need, fee, breeze, field, creeps, meats, mean, reek, veal, knead, creek, freeze.

[ɪ]

bit—[bɪt]

The sound [ɪ] is high-front, lax, unround. That is, [ɪ] is produced with the tongue arched high in the front of the mouth, but slightly lower and farther back than for [i]. The passage for the air over the tongue is of much the same width as for [i], but vertically greater. The tongue maintains practically the same lateral contact with the upper teeth as for [i]. [ɪ] is sometimes called a relaxed analog of [i], the glossal muscles[8] being relaxed. The lips are open but unround.

Spelling of [ɪ] words: *e* as in *pretty, English*; *ea* as in *clear*; *ee* as in *been*;[9] *ei* as in *weir*; *i* as in *it*; *ie* as in *sieve*; *o* as in *women*; *u* as in *business*; *ui* as in *built*; *y* as in *hymn*.

The sound [ɪ] does not occur in French, Spanish, Italian, and a few other languages. It is therefore replaced with [i] by many foreigners learning English. These must be taught that [i] is spoken with tense glossal muscles, and [ɪ] with lax glossal muscles. In some dialects and languages, as Yiddish and Spanish, the [i] used by the foreigner is lower and more lax than English [i], but higher and more tense

[7] Observe that transcription is a record of sound, not of orthography (spelling). Set down a symbol for each sound as it is heard, not for each letter as seen on the page. Ordinarily, there will by no means be as many sounds as letters, as in *clique* [klik]; occasionally there will be more, as in *tax* [tæks].

[8] Together with, as before, and in many following instances, the adjacent or related muscles.

[9] In some eastern and in most British speech, *been* is correctly pronounced [bin].

than English [ɪ]. When this medial sound is substituted indiscriminately for English [i] and [ɪ], English ears are prone to get an effect of exact reversal—that is, of [i] used for [ɪ], and of [ɪ] used for [i]. The speaker must be taught to pronounce not one all-purpose sound, but two separate, contrasting sounds, by "splitting" the [i-ɪ] phoneme. This splitting is effected by pronouncing pairs of words like *peal* and *pill*, *seal* and *sill*, and the like. Several such pairs appear below. In the South and occasionally elsewhere, [ɛ] is erroneously substituted for [ɪ] before nasals. (See following section on [ɛ].)

Transcribe: brim, brig, brisk, bib, bit, bid, hymn, big, bill, cyst, city, disk, dig, busy, dip, ditty, fig, fit, sieve, dizzy, gig, gilt, grit, ill, will, flit, built, pits, lid, kits; mint, mean; since, scenes; bin, bean; tin; din, dean; finned, fiend; lint, leaned; zip, zeal; mill, meal; pill, peal; sill, seal; fill, feel; dill, deal; kill, keel; sin, seen.

[ɛ]

met—[mɛt]

The sound [ɛ] is low-mid-front, lax, unround. That is, [ɛ] is produced with the tongue lower, but nearly as far front as for [ɪ]. The sides of the tongue lie along the upper molars from the back to a point perhaps one inch from the tongue tip. The passage over the tongue for the air stream is larger both horizontally and vertically than for [i] or [ɪ]. The muscles of the mouth and tongue are relatively lax and the lips unround. The symbol [ɛ] is often referred to as "epsilon."

Spelling of [ɛ] words: *a* as in *many*, *ai* as in *said*; *ae* as in *aesthetic*; *ay* as in *says*; *e* as in *end*; *ea* as in *breath*; *ei* as in *heifer*; *eo* as in *leopard*; *ie* as in *friend*; *u* as in *bury*.

The sound [ɛ] is very unstable in English. It is particularly susceptible to change through influence of neighboring consonants. The preceding [t] in *ten* places the tongue too

high for the pronunciation of [ɛ], and some speakers fail to lower the tongue for the vowel, so that the word becomes [tɪn]. The tongue often anticipates the [t] in *get* and rises toward the [t]-position too soon, so that the [ɛ] is raised to [ɪ] and the word becomes [gɪt]. This error is found throughout the United States. In an exactly similar way, the tongue may anticipate a following [n] and rise toward the [n]-position too soon, so that [ɛ] is raised to [ɪ], and *men, den,* and the like become [mɪn, dɪn]. This is a common error in the South and is found occasionally elsewhere. The manner of its occurrence suggests its correction. The speaker must simply inhibit the anticipatory elevation of the tongue until the vowel has been completely pronounced.

This error is matched by a corresponding opposite error, also common in the South but known in other sections—that of lowering [ɪ] to [ɛ], as in *endex* [ɛndɛks] for *index* [ɪndɛks], and *sence* [sɛnts] for *since* [sɪnts]. This is an error of hyperurbanism, or over-correction.

Rustically, especially in the South and in the general American area, [ɛ] before [d] and [g] in a few words diphthongizes to [eɪ], as when *egg* becomes *aig* [eɪg]. Other words in this class are *leg, edge, sedge, bed, head.*

In some languages, notably French, there is an [ɛ] much lower than the English [ɛ], for example, French *frère* [frɛr]. When this [ɛ] is used for the English [ɛ], the effect to English hearers is of the next lower vowel, [æ]. Thus *ten* sounds like *tan,* and so on. French speakers must be on guard to use the English member of the [ɛ] phoneme.

Transcribe: bed, crept, dead, guest, held, tent, many; ten, tin; men, test, rest, Thames,[10] swell, said, fret, end, lend, sell; send, sinned; Kent, bent, fell, dell, blest, friend, crest; well, will; wet, get; set, sit; bury, seat; pin, pen; real, rill, pets, bets, fence, dense, dents, splints; list, lest; men's, Min's; rents, rinse; next, text, clinic; wend, wind; tend, tinned; tents, tints; bell, bill; tell, till; egg, let, head.

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[10] Note that *s* may have the sound of [z].

[æ]

sat—[sæt]

The sound [æ] is low-front, lax, unround. That is, [æ] is produced with the tongue lower in the mouth than for [ɛ], the tip resting lightly against the sides of the lower teeth, with the upper edges visible above the teeth. The contact of the tongue with the upper teeth, which characterizes [i], [ɪ] and [ɛ], is definitely broken. The air passage over the tongue is wide, and it is vertically much greater than for [ɛ], since the tongue is lying quite low. The glossal muscles are lax and the lips unround.

Spelling of [æ] words: *a* as in *hat*; *aa* as in *baa*; *ai* as in *air*;[11] *au* as in *laugh* (except when pronounced with a broad *a* [ɑ]); *ea* as in *bear*; *ei* as in *heir*;[11] *i* as in *meringue*.[12]

The sound [æ] is one of the most troublesome in English. Though musical and pleasing when spoken with the tongue low in the mouth and out of contact with the upper teeth, it is flat and offensive when spoken with the tongue arched high toward the palate, in contact with the upper teeth. Its ugliness is augmented when it is nasalized; and the restriction of the mouth passage by the elevation of the tongue appears to tempt the speaker to lower the velum and nasalize, perhaps to provide the easy exit for the air that is denied by the crowding of the tongue against the palate. Mere flattening of [æ] produces a pronunciation which may be represented by a raised [æ]; thus, [æ˖]. A word such as *hand*, pronounced with this distorted vowel, would be [hæ˖nd]. If nasalized, the same word would be [hæ̃˖nd].

In some sections, particularly in the South, [æ] is attenuated through drawling, and becomes successively a diphthong, a triphthong, and a double diphthong, as follows: [æɪ] or [æə]; [æjə]; and [æɪjə]. The word *class* may thus become [klæɪs], [klæjəs], or [klæɪjəs], usually the first or

[11] These words are correctly pronounced with [ɛ] or [æ], [ɑ] prevailing in the South. See page 62 on words spelled *-are, -air, -arr, -ear, -eir*.

[12] In its Anglicized pronunciation, not in its French pronunciation.

the last.[13] This error must be corrected by a more brisk, nondrawling pronunciation, using a pure [æ].

In the South and in the Appalachian and Ozark Mountain areas, [æ] in *can't* is raised and diphthongized to [eɪ]; thus, [keɪnt]. This conspicuous error is sometimes used as a test to determine the origin of a speaker, or his degree of training. In New York City there is also diphthonging by the addition of [ɔ]. This is accompanied also by the raising of [æ] to [ɐ], so that *man* becomes [mɐɔn]; *stand*, [stɐɔnd]; *bath*, [bɐɔθ]; *grab*, [grɐɔb], and so forth. This [ɐ] is often nasalized so that *man* becomes [mɐ̃ɔn].

Where foreign language influence is strong, [æ] is nearly sure to be replaced by a substitute vowel, since very few languages besides English contain [æ]. Many foreigners, including Germans and some central Europeans, substitute [ɛ], which is regarded as highly unsatisfactory. By this error, *class* becomes [klɛs]; *cat*, [kɛt]; and so forth. The New York City error just discussed originated as a foreign language substitution. But speakers of Romance languages usually substitute the Romance [a] (see page 56), which, though suggesting slight foreign accent, is a fairly satisfactory makeshift.

Rustically, throughout the United States, *has*, *have*, *had*, and *radish* become [hɛz, hɛv, hɛd, rɛdiʃ]— ([ʃ] is the symbol for the sound of *sh*). And [kɛtʃ] for *catch* ([tʃ] symbolizes the sound of *ch* or *tch*) is a highly prevalent error, both rustic and urban.

Some native speakers, in their anxiety to avoid a raised, nasal, or drawled [æ] substitute for it the next lower sound, [a]. This practice is preferable to that of using an objectionable form of [æ], but it is unnecessary and may seem affected. Pure [æ] is an excellent sound.

Transcribe: add, bad, cad, clad, fad, lamb, nap, hand, stand, cant, cat, slat, slap, wrap, rap, trap, gnat, lamp, black, crag, ham,

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[13] The symbol [j] represents the sound of *y* in *yell* (see page 66); the symbol [ə] represents the last sound in *Cuba* (see page 53).

staff; man, men; pick, pack, peck, peek; gas, guess; pat, tacks, Vance, manly, Aztec, ghastly,[14] asks, asked, says, rick, rack; fin, fen, fan; tin, ten, tan; tit, tat; bag, beg; band, bend; candy, glad, grand.

[ɑ]

balm—[bɑm]

The sound [ɑ] is low-back, lax, unround. That is, [ɑ] is produced with the tongue low in the mouth but arched slightly at the back. The glossal muscles are lax; the lips are usually unround, or, at any rate, only a very little rounded.

Spelling of [ɑ] words: *a* as in *calm*; *aa* as in *bazaar*; *e* as in *sergeant*; *ea* as *hearth*; *eau* as in *bureaucracy*; *o* as in *not*[15] (but see page 61 for discussion of [ɒ] for this spelling); *oh* as in *John*; *oi* as in *boudoir*; *ou* as in *hough*;[15] *ow* as in *knowledge*.[15]

In New England, the sound [ɑ], when spelled with *a*, followed by *r*, and not preceded by [w], is often fronted, or fronted and raised too high, so that a word such as *park*, instead of being pronounced acceptably as [pɑːk] or [paːk], becomes [pæk], which is regarded as an error. In Virginia and to some extent elsewhere, [j] (see page 66) is erroneously inserted after [g] and [k], as in *car* and *garden*, producing [kjɑː], [gjɑːdn̩].

Rustically, words in *alm* are sometimes mispronounced with [æ], as *calm* [kæm].

Transcribe: slap, sleet, slit, slot, slat, Scott, seat, balm, calm, alms, psalm, not, stop, sop, drop, cot, Con, sod, lock, knock, sock, rock, flock, rocky, block, frock, pick, pack, Dick, dock, peak, deck, palm, watt, fox, nod, mop, hods, fop, rod, box, sand lot, nonstop.

Transcribe the next list as for southern, eastern, or British speech, regarding all final and preconsonantal *r*'s as silent. Since the time value of such *r*'s is given to the preceding

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[14] *Ghastly*, *asks*, and *asked* belong to the "broad a" category and so are pronounced with [ɑ] in British and with [ɑ] or [a] in eastern. See pp. 47.

[15] Pronounced [ɑ] in southern and general American, but frequently [ɒ] in eastern and British.

vowels, the added length of the vowel may be expressed by the regular I.P.A. symbol for added duration, [ː]. (Caution: do not regard [ː] as a symbol for [r]; it represents no sound whatever.) Eastern students who wish to use [a] rather than [ɑ] in these words had best turn to page 56 before transcribing, and read concerning the use of [a]. Southern students and some students in New York, and in Philadelphia, and other areas where the general American speech borders on the southern are warned not to use [ɔ] in any of these words. Their problem in respect to the substandard use of this sound will be taken up in the following section on [ɔ].

Transcribe: art, at; arm, am; bard, bad; bark, back; card, cad; cart, cat; carve, calve; hard, had; hark, hock; harm, ham; heart, hat; lark, lack; lard, lad; marred, mad; mort, mat; pard, pad; part, pat; park, pack; tart, tat.

The following words are pronounced with [ɑ] on the stage and by many eastern and British speakers; other speakers, particularly in the East and in Ireland and Scotland, use [a]. [a] often represents a compromise between [ɑ] and [æ]. [æ] is, of course, regular in these words in the speech of most Americans. These words belong to the class often called "broad-*a*" words. Broad-*a* words are most often spelled with *a* in stressed syllables, followed by the sound of [f], [s], [θ] (the symbol for voiceless *th*) or [n] plus a consonant. An example of each is *half* [hɑf], *past* [pɑst], *path* [pɑθ], *dance* [dɑnts]. In plurals, [ɑ] may be followed by [v] instead of [f], and by [ð] (the symbol for voiced *th*) instead of [θ], as in *halves* [hɑvz] and *paths* [pɑðz].

Transcribe: aft, ask, aunt, bask, blast, brass, calf, calves, can't, cask, cast, caste, clasp, class, craft, crafty, daft, dance, draft, fast, flask, France, ghastly, glance, glass, graft, grant, grasp, grass, half, halve, halves, hasp, lance, last, laugh, mask, mast, nasty, pass, past, plant, prance, raft, rasp, remand, reprimand, repast, slant, staff, task, trance, vast, waft.

The following are pronounced with [æ] in all dialects:

Transcribe: and, ant, asp, bass, bland, can, cant, classic, crass, expanse, expand, fancy, finance, gland, grand, haft, hand, hast,

land, lass, man, manse, mass, massive, mastiff, pant, passive, plastic, rant, sand, scant, slant, stand.

[ɔ]

law—[lɔ]

The sound [ɔ] is low-mid-back, tense, round. That is, [ɔ] is produced with the tongue, as a whole, low in the mouth, but with an elevation at the back higher than for [ɑ]. The tip is more withdrawn than for [ɑ]; the glossal muscles are fairly tense; and the lips are considerably rounded.

Spelling of [ɔ] words: *a* as in *tall*; *au* as in *caught*; *aw* as in *shawl*; *eo* as in *George*; *o* as in *orb*; *oa* as in *abroad*; *oi* as in *reservoir*; *ou* as in *bought*.

By error [ɔ] frequently becomes diphthongized in the South to [ɔʊ] or [ɔo], as in [wɔʊk] or [wɔok] for *walk* [wɔk]. In southern British, [ɔ] is raised very nearly to [o] in some words, such as *all* [ɔ˕l].

In the three words *on*, *gone*, and *want*, in the South, [ɔ] is often erroneously raised and diphthongized to [oʊ], producing [oʊn, goʊn, woʊnt].

In the general American area, when [ɔ] is spelled with *a* and followed by *sh*, it is sometimes erroneously diphthongized to [ɔɪ], or given an added [r]. Thus *wash* [wɔʃ] becomes [wɔɪʃ] or [wɔrʃ].

In New York City, in words like *thought*, *taught*, *all*, *because*, and so on, [ɔ] is changed to [ɔɔ] by diphthonging, or to [oɔ] by raising and diphthonging, producing [θɔɔt, θoɔt; tɔɔt, toɔt; ɔɔl, oɔl; bɪkɔɔz, bɪkoɔz]. This is regarded as an error, though merely raising the [ɔ] in the direction of [o], as in *all* [ɔ˕l], is common in the New York City area, in New England, and in England, and is considered correct. The diphthongs [ɔɔ] and [oɔ] are to be avoided in the following list, both in transcription and in pronunciation.

In some parts of the South and in New York City, *a* plus *r*, when not preceded by a [w] sound, is often incorrectly raised

to [ɔ], so that *farm* becomes [fɔ:m], *art*, [ɔ:t], and so on. The *r* is silent, of course, in such words in the South and usually in New York City. Some speakers in New York City pronounce the *r* along with the erroneous [ɔ], producing [fɔrm] for *farm*, [hɔrm] for *harm*, [hɔrt] for *heart*, [ɔrt] for *art*. This same error is also common in Philadelphia, in east Texas, and in various other places where the erroneous southern substitution of [ɔ] for [ɑ] comes into contact with the standard post-vocalic [r] of the general American.

Rustically, [æ] is substituted for [ɔ] in a few words, of which *haunt* and *gaunt* are examples, producing [hænt] and [gænt].

Transcribe: all, ball, hall, gall, fall, feel, fill, fell, Paul, vault, pa,[16] waltz, crawl, sprawl, sought, fought, awl, salt, squaw, haul, small, draw, law, saw, walk, on, gone, want.

Transcribe for southern, eastern, or British speech, considering all post-vocalic *r*'s silent: art,[17] ought; maw, mar; awk, ark; maul, marl; balk, bark; sought, sort; taw, tar; paw, par; stalk, stork, stark; dawn, darn; hawk, hark; caw, car; caught, cart; hawed, hard; awe, or, are; haughty, hearty; gauze, gars; cawed, card; mawk, mark; call, Carl; form, farm; taught, tort, tart; caught, cart; 'cork, caulk, cark; corpse, carps; haunt, gaunt, jaunt.

Transcribe again, using the general American [r]'s.

[ʊ]

full—[fʊl]

The sound [ʊ] is high-back, lax, round. That is, [ʊ] is produced with the tongue arched considerably higher in the back of the mouth than for [ɔ]. The tongue tip is withdrawn somewhat behind the lower incisors, and the sides of the tongue lie in contact with the inner surfaces of the upper molars. The glossal muscles are lax and the lips round. The air passage over the tongue is wide horizontally and fairly wide vertically.

[16] Pronounced with [ɑ] in some sections, particularly in the East.

[17] As previously suggested, some easterners may prefer to use the optional [a] instead of [ɑ] in these words.

Spelling of [ʊ] words: *o* as in *bosom*; *oo* as in *foot*; *ou* as in *should*; *u* as in *full*.

The sound [ʊ] is found in German and occasionally in Spanish, but it is absent from most foreign sound systems. The substitute sound is usually [u]. See the following section on [u] for suggestions.

In the general American area, [ʊ] before *sh* is sometimes erroneously diphthongized to [ʊɪ] or has an [r] added. Thus *push* [pʊʃ] becomes [pʊɪʃ] or [pʊrʃ].

Transcribe: book, cook, good, hood, nook, look, brook, wood, would, pull, sill, seal, sell, pet, put, pat, pit, peat, could.

[u]

fool—[ful]

The sound [u] is high-back, tense, round. That is, [u] is produced with the tongue arched high in the back of the mouth and the tip withdrawn. There is a horizontally wide but vertically narrow opening for the air between the blade of the tongue and the palate. The sides of the tongue lie along the upper molars from the back to a point near the front. The glossal muscles are tense and the lips round.

Spelling of [u] words: *au* as in *Sault* (Ste. Marie); *ew* as in *drew*; *eu* as in *rheumatic*; *o* as in *move*; *oe* as in *shoe*; *oo* as in *fool*; *ou* as in *troup*; *iou* as in *Sioux*; *u* as in *rule*; *ue* as in *construe*; *ui* as in *fruit*.

There is great uncertainty about whether to use [ʊ] or [u] in many words. In case of doubt, [u] is usually the safer. *Root, food, roof, room, broom, hoof* are best pronounced with [u]. Where [ʊ] is indubitably correct, as in *rook* [rʊk], there is seldom or never any temptation to use [u]. Many foreigners will use [u] for [ʊ] and will require to be taught to lower the tongue, unround the lips a little, and relax the sub-glossal muscles. A drill to "split" the [ʊ–u]-phoneme is often necessary. Paired words, such as *pull* and *pool* [pʊl, pul], *full* and *fool* [fʊl, ful], are best for drill. This is

especially helpful to speakers of Spanish, whose [u] and [ʊ] lie very close together, the [u] being lower than English [u] and the [ʊ] higher than English [ʊ].

Some New York City speakers erroneously diphthongize [u] to [ɪu] or [ɛu], as in *do* [dɪu, dɛu], *to* [tɪu, tɛu].

Transcribe: do, to, Sue, food, move, groom, loom, Sault, blew, moon, spoon, swoon, boost, rule, troop, Sioux, Andrew, blue, root, rheumatic, loom; wooed, would; cooed, could; bull, fruit, clue, drew; pull, pool; full, fool; broom, hoof, room, crude, bruise, booze, who's, whose, shoes.

[ʌ]

cup—[kʌp]

[ʌ] is low-mid, back-central, lax, unround. That is, [ʌ] is produced with the tongue low in the mouth, its greatest elevation being somewhat back of the center. The tip lies loosely behind the upper teeth. The glossal muscles are lax and the lips unround.

Spelling of [ʌ] words: *o* as in *love*; *oe* as in *does*; *oo* as in *flood*; *u* as in *cup*; *ou* as in *touch*.

Foreigners usually substitute [ɑ], [ɔ], or [u] for [ʌ], so that *up* becomes [ɑp], [ɔp], or [up]. In large cities, such as New York City, the foreign language influence persists in the speech of younger generations, so that [ɑ] is often heard in [ʌ] words, such as *some, govern, compass, comfort.* Speakers who use [ɑ] must be taught to raise and front the tongue a little; those who use [ɔ] must be taught to front the tongue and unround the lips; those who use the [u] must be taught to lower and front the tongue and relax the lips to practical unroundness.

Rustically, [ʌ] becomes [ɛ] in *brush* and [ɪ] or [ɛ] in *such* and *just.*

Transcribe: dove, blood, up, mull, rut, tuft, does, once, tut, ducks, cluck, cuff, tough, hiccough, mumps, won, muff, flood, one, luck, dull, gulp, enough, rough, dump, gun, gone; Opp, up; cup, cop, coop; bud, bawd; ruddy, Rudy; buck, book; cull, call, cool;

wrought, root; rustic; some, psalm; come, calm; bum, bomb; rum, dumb, crumb, hum.

[ə]

above—[əbʌv]

The sound [ə] is mid-central, lax, half-round. That is, [ə] is produced with the tongue lying in the central part of the oral cavity. The tongue tip lies behind the lower teeth. The glossal muscles are lax and the lips half-round. The sound [ə] may be thought of as a weak, brief, completely centralized analog of [ʌ].[18] It is always used in unaccented syllables and may represent a weak form of nearly any phonetic vowel. It may be a final sound as in *Rita* [ritə], an initial sound as in *above* [əbʌv], or within a word as in *fantasy* [fæntəsɪ]. This sound is often spoken of by the name "schwa."

The sound [ə] is approximately equal to the French mute *e* as in *être* [ɛtrə], or the German final *e* as in *Knabe* [knabə]. It is a sound which any orthographic English vowel and some orthographic vowel combinations may take on when unstressed.

Spelling of [ə] words: *a* as in *accord*; *e* as in *society*;[19] *i* as in *residence*;[19] *o* as in *parrot*; *u* as in *suspect*; *y* as in *etymologist*;[19] *ea* as in *pageant*; *eo* as in *escutcheon*; *ou* as in *curious*.

Since [ə] is a sound used in unstressing, it easily becomes confused with [ɪ], which is also used in unstressed syllables. Rustically, especially in general American and mountain areas, [ɪ] is substituted for [ə] in *soda*, *sofa*, and the like, producing *sody* [soudɪ], *sofy* [soufɪ]. Conversely, by overcorrection [ə] is erroneously substituted for the final [ɪ] in *Missouri*, *Miami*, *Cincinnati*. In illiterate speech, [ə] sometimes appears as an excrescent sound in words like *film*, *elm*, and *athletic*, producing [fɪləm], [ɛləm], and [æθəlɛtɪk].

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[18] But see discussion later under various headings, particularly Unstressing, p. 79ff.

[19] These may also be pronounced with unstressed [ɪ].

Transcribe: upon, Ella, appall, Anna, command, idiot, Eva, analysis, calla, applaud.

[ɜ] and [ɝ]

were—[wɜ:] (southern, eastern, and British)
were—[wɝ] (general American)

The symbol [ɜ] represents the sound made by most southern, eastern, and British speakers for the vowel in such words as *earn, fern, bird, work, journey, turn,* and *Myrtle.*

General American speakers use a different sound in these words, the sound being indicated by the symbol [ɝ].

To produce [ɜ], the tongue lies in the central part of the mouth with the tip flattened. The whole tongue is drawn slightly forward, with an additional arching of the central part. The glossal muscles are somewhat tense and the lips half-round. Orthographic *r* always appears in the spelling of these words, but it is not pronounced by southern, eastern, and British speakers. A lengthening sign indicating the length which *r* would have, if spoken, is given to the preceding vowel. Thus, *fur* in southern, eastern, and British speech is transcribed [fɜ:]. The symbol [ɜ] is often referred to as "reversed epsilon."

The production of [ɝ] requires a retraction and elevation of the whole tongue with an additional elevation and retroflection of the tip. The tip points toward the roof of the mouth at about the center of the hard palate. The sound [ɝ] may also be made by elevating the middle of the tongue, without retroflection of the tip. Speakers to whom [ɝ] is a new sound may choose the manner which is easier for them.

Fur is transcribed for general American speech as [fɝ]. The symbol [ɝ] represents both the orthographic vowel and the orthographic *r*, the values of which may be thought of as being blended into the single sound. The symbol is often spoken of as designating the "vowel *r*."

Spelling of [ɜ] and [ɝ] words: *er* as in *were*; *ear* as in *heard*; *ir* as in *bird*; *olo* as in *colonel*; *or* as in *work*; *our* as in *journal*; *ur* as in *cur*; *yr* as in *myrrh.*

The sound [ɜ] is very often diphthongized to [ɜɪ] in New York, in some other large cities, and in the South. (In all of these areas [ɜ] occasionally becomes [ɔɪ], but this pronunciation, despite the insistence of comic strips and the motion pictures, is relatively rare.) This error is very hard to correct. The best plan is to find some word in which [ɜ] is not diphthongized (*burr, were, her,* and *fur* are safe ones for most speakers), and then to transfer the vowel to words where difficulty has arisen, so that *bird, work, herd, fern* will be [bɜ:d], [wɜ:k], [hɜ:d], [fɜ:n], not [bɜɪd], [wɜɪk], [hɜɪd], [fɜɪn].

In illiterate speech [ɜ] or [ɜ˞] in a few words is changed to [ʌ], as in [bʌst] for *burst*, [kʌs] for *curse*, [wʌθ] for *worth*, and so forth. Another error in the use of [ɜ˞] is its substitution for [ɛr] in *American, terrible*, and the like, producing [əmɜ:əkən, tɜ:əbəl] for [əmɛrɪkən, əmɛrəkən, tɛrɪbəl, tɛrəbəl].

Transcribe with [ɜ] or [ɜ˞] according to your own speech: were, work, word, wort, worse, worst, worm, world, her, herd, heard, hurt, hearse, hurl, cur, curb, curve, curly, curds, curt, curl, curse, burr, bird, Bert, burn, burst, sir, turn, insert, absurd, serve, first, purr, purse, fern, pearl, pert, person, earn, urn, early, earl, irk, term, myrrh, Myrtle, colonel, stir, search, Herbert, Herman.

Diphthongs and pure vowels

A diphthong is the union of two vowel sounds to form a blend of continuous sound. Actually, there are an infinite number of sounds between the beginning and the end of the diphthong; but only two characters (phonetic symbols) are used to represent the whole series, these being the opening and the closing sounds. Acoustically regarded, only these two sounds make any noteworthy impression on the ear. In English the commonly used diphthongs have the voice stress on the first of the two phonemes represented.

All the symbols on the vowel chart represent pure vowels, that is, single sounds, not diphthongs. But some of the pure vowels are not in common usage in English. It was mentioned in an earlier discussion that the third, sixth, and tenth vowels on the diagram would be omitted until a later discussion. These vowels, [e], [a], and [o], respectively, are

seldom used alone or in their pure form in English, but instead are nearly always in combination with other sounds to form diphthongs.

In the pages immediately following, the five English diphthongs, together with a discussion of their components (when a component is one of the unfamiliar pure vowels), will be presented.

[a], [aɪ], [aʊ]

[a] *patte*—[pat] (French); [aɪ] *lie*—[laɪ]; [aʊ] *cow*—[kaʊ]

The sound [a] lies between [æ] and [ɑ], as indicated on the vowel chart. It is low-front, lax, unround. That is, the tongue is very low in the mouth, with its arch near the front. The glossal muscles are lax and the lips unround.

Pure [a], like pure [e] and [o], is seldom spoken alone in English. But in the East, it is used regularly by many people as a "compromise" form of the broad *a*. That is, in *half, class, path, dance,* and the like, [a] is used as a compromise between [æ] and [ɑ], and *half* is pronounced [haf] rather than the [hɑf] of extreme eastern speech, or the [hæf] of the rest of the United States. The sound [a] is also used by many easterners for final and preconsonantal [ɑr] spellings, as in *hard* [haːd], *car* [kaː], instead of the [hɑːd], [kɑː] of other easterners and of southerners, and the [hɑrd], [kɑr], of general American speakers.

Also, [a] is regularly combined with [ɪ] to form the diphthong [aɪ], and with [ʊ] to form the diphthong [aʊ]. The common name of [a] is "French *a*."

Spelling of [aɪ] words: *ai* as in *aisle*; *ei* as in *height*; *eye* as in *eye*; *i* as in *ice*; *ie* as in *die*; *oi* as in *choir*; *oy* as in *coyote*; *y* as in *dry*; *ui* as in *beguile*;[20] *ye* as in *rye*; *uy* as in *buy*.

In the South, the diphthong [aɪ] loses its second element and appears as either the pure vowel [a] or the pure vowel [ɑ] 493 times out of 1714, according to statistical investiga-

[20] Disregarding the use of *u* as a diacritic to "harden" the *g*.

tion.[21] The loss of the second element is not acoustically conspicuous so long as the remaining vowel is [a]; but when it becomes [ɑ], it is objectionably noticeable, as in *ah* [ɑ] for *I* [aɪ], *mah* [mɑ] for *my* [maɪ], and *hah school* [hɑ skul] for *high school* [haɪ skul].

In New York City, a substandard [ɒɪ] or [ɔɪ] is heard for [aɪ]. [ɑɪ] is also heard, but is not regarded as particularly objectionable.

In rural New England, the sound [ɜɪ], observed in England as far back as the 18th Century, still persists as the rendering of [aɪ], especially by old people, producing [mɜɪs] for *mice*, [flɜɪz] for *flies*, and so forth.

Transcribe: fife, kite, dye, grime, pat, rye, night, gnat, line, rime, lame, lime, lend, light, plight, wright, kind, rice, fine, sign, tile, grind, ice cream, bile, pine tree, aisle, sky, harassed, respite, bade, supple, ribald, comely, subpoena, eczema, prelate, I, ah, my, mine; ride, rod; side, sod; abide; hide, hod; blind, blond; mind; fined, fond; vine, type, top, cry, rise, ice, mile, behind, nine, buy, by, drive, fine, time, high, size, line, wise, wine, five, sky.

Spelling of [aʊ] words: *au* as in *kraut*; *ou* as in *out*; *ow* as in *cow*.

The diphthong [aʊ] deserves particular attention, for the first element, [a], is very frequently raised to [æ˖] or [ã˖], which may then become diphthongized to [jæ˖] or [jã˖] so that a word like cow may be pronounced [kæ˖ʊ], [kã˖ʊ], [kjæ˖ʊ], or [kjã˖ʊ], any one of which is a very bad pronunciation indeed.

In correcting this error, it has been found best to regard the diphthong temporarily as [ɑu], and to pronounce its elements separately and then together, progressively quickening the liaison until [aʊ] finally results, thus: [ɑ, u; ɑ———u; ɑ——u; ɑ—u; ɑu, aʊ]. When the speaker can control the isolated diphthong, then he can speak it correctly within words, as *out* [aʊt], *county* [kaʊntɪ].

In Virginia [aʊ] is often changed to [ɜʊ] before voiceless

[21] Harry S. Wise, "A Study of the Southern [aɪ] Phoneme," Louisiana State University, 1937, p. 100 (unpublished thesis).

consonants, as in *a͡bout* [əbɜʊt], *house* [hɜʊs]. This change, though provincial, is not offensive to the ear.

Transcribe: house, drown, loud, crown, town, clown, sow, plough, brown, outrun, doubt, debt, data, strata, type, gaunt, drought, xylophone, lifelike, nape, precedence, precedent, conversant, grimace, horizon, asphalt, abdomen, alternate, barbarous, armistice, cow, down, round, around, brown, sound, out, about, howl, cowl, Faust, county, allow, mouse, ounce, hour.

[ɔɪ]

boy—[bɔɪ]

In the diphthong [ɔɪ], the vowels [ɔ] and [ɪ] are blended to form the single combination [ɔɪ].

Spelling of [ɔɪ] words: *oi* as in *oil*; *oy* as in *ooy*; *uoy* as in *buoy*.

It was mentioned in the discussion of [ɜ] that it is often diphthongized to [ɜɪ] in New York City and in the South, and that occasionally in New York, New Orleans, and some other large cities, this [ɜɪ] is even changed to [ɔɪ], so that a word like *bird* [bɜ:d] becomes *boid* [bɔɪd]. Conversely, a word like *oil* may be heard as [ɜɪl] and, in rare cases, even as *erl* [ɜ·l]. The same shift occurs when *point* [pɔɪnt] becomes [pɜɪnt] and then possibly [pɜ·nt]. *Joint* and many other words undergo the same change of diphthongs. The fact that *curl* and *coil* may both be mispronounced as [kɜ·l] promotes confusion through ambiguity, even though the error may not go so far as to result in *curl* being pronounced [kɔɪl] and *coil* pronounced [kɜ·l]. Accordingly, the words for transcription in the following list are arranged in pairs, so as to show necessity of giving the correct pronunciations.

Rustically throughout the United States, [ɔɪ] may change to [aɪ]. Thus an old whaler in New England may speak of *oil* as [aɪl], and an elderly farmer in any section may call the *joists* in his barn [dʒaɪsts]. In the South [ɔɪ] is sometimes reduced to [ɔ:], so that *boil* becomes [bɔ:l]; and in the general American area an [r] may be inserted, so that *oil* becomes

[ɔrl]. The following list is designed to help correct these errors and to prevent ambiguities that might arise from them.

Transcribe: Roy, coil, Hoyle, foil, Detroit, voice, Rex, called, fret, oil, soil, toy, coy, loin, walnut, swiftly, Peggy, phonetic, moist; oil, aisle, all; toil, tile; file, foil; boil, bile, bawl; soil, side, Saul; joint, jaunt; spoil, spile; point, pint; joist, join.

Transcribe as for southern or eastern speech: learn, loin; fern, Foyne; Boyne, burn; herd, hoyden; Boyd, bird; hurl, Hoyle; curl, coil; first, foist; early, oily; ointment.

Transcribe as for general American: earl, oil; burl, boil; curl, coil; early, oily; Spurlock, spoil; Searles, soils; furl, foil; learns, loins; hearsed, hoist; poison.

[o—oʊ]

bold—[boʊld]

The vowel [o] occurs in its pure form in American speech only in occasional unaccented syllables. It is nearly always combined with the vowel [ʊ] to form the diphthong [oʊ]. The sound [o] occurs regularly in Spanish, French, and Italian in such words as Spanish *loco* [loko], French *sot* [so], and Italian *poco* [poko]. It occurs in unaccented syllables in English, as in *follow* [falo], *pillow* [pilo], and *tobacco* [təbæko].

The sound [o] lies between [ɔ] and [ʊ], as indicated on the vowel chart. It is high-mid-back, tense, rounded. In producing [o] the tongue is arched at the back of the mouth. The arch is slightly higher than for [ɔ]. The lips are more round. The oral and glossal muscles are tense.

Spelling of [oʊ] words: *au* as in *sauté*;[22] *eau* as in *beau*;[22] *eo* as in *yeoman*; *ew* as in *sew*; *o* as in *old*; *oh* as in *oh*; *oa* as in *coal*; *oe* as in *mistletoe*; *oo* as in *brooch*; *ou* as in *boulder*; *ow* as in *bow*.

Transcribe: dome, foam, groan, local, open, polo, Ora, moult, alone, callow, window, Roosevelt, quota, old, holy, bolt, soap, boast, toes, follow, omit, salary, business, chasm, Caribbean, protein.

The single word *home* is often pronounced [hum] by Louisiana speakers of French and Italian extraction.

[22] The words are [soté], [bo] in French, but the English pronunciation is [soutei] and [boʊ].

Some of the words in the next transcription list are arranged to correct the southern diphthongization of [ɔ] to the combinations [ɔʊ] and [ɔo], which were mentioned earlier, whereby *hawk* may become [hɔʊk] or [hɔok]. Where this error is inconspicuous, it may be scarcely worth correcting. Other words are paired to illustrate and correct the occasional southern error of raising [ɔ] to [oʊ] in the three words, *on* and its derivatives, *gone*, and *want*, producing [oʊn], [goʊn] and [woʊnt].

Transcribe: talk, balk, walk; ought, oat; caught, bought, boat; upon, a pone; wont, want, won't; on, own; brought, sought, fought, taught, hawk, cloy, coiled, boasts, posts, toasts, moat, nose, fold, note, veto, sold, hose, hosts, roasts, ghosts.

In New England there is a peculiar modification of [oʊ] known as the "New England short *o*." The symbol commonly used is [o]. The sound resembles [ʌ] acoustically but it is really a form of pure [o] unrounded and often somewhat centralized. The sound [o] occurs most often in five common words: *home* [hom], *boat* [bot], *whole* [hol], *stone* [ston], and *only* [onli]; but it is occasionally heard in a number of other similar words. Dialect writers, lacking an accurate orthographic symbol, spell the sound with *u*, as in *hum*, for *home*; *hull* for *whole*. The sound is regarded as incorrect.

Transcribe: stone, wholly, topcoat, rowboat, only, home, homely.

[e—eɪ]

day—[deɪ]

The vowel [e] seldom occurs in its pure form in English speech. It occasionally appears in unaccented positions, as in the first syllable of *chaotic* [keˈɑtik]. It occurs regularly in Spanish, French, and Italian, in such words as Spanish *que* [ke], French *été* [ete], and Italian *che* [ke].

Pure [e] lies between [ɪ] and [ɛ], as indicated on the vowel chart. It is high-mid-front, tense, unround. That is, the tongue tip is lower than for [i] and [ɪ], with the whole tongue

slightly retracted. Contact of the sides of the tongue with the upper teeth, as for [i] and [ɪ], is maintained. The glossal muscles are tense, and the lips unround.

In English [e] is combined with [ɪ] to form the diphthong [eɪ]. The diphthong [eɪ] is much more common than [e], as in the second syllables of *abate* and *obtain*, and in most of the examples following.

Spelling of [eɪ] words: *a* as in *ale*; *ae* as in *brae* (Scotch); *ai* as in *frail*; *ao* as in *gaol*;[23] *au* as in *gauge*; *ay* as in *lay*; *e* as in *blasé*;[24] *ea* as in *great*; *ei* as in *heinous*; *ey* as in *they*.

In the South, [eɪ] shifts to [ɛ] in certain words, as *make* [meɪk] to [mɛk], *take* [teɪk] to [tɛk], *snake* [sneɪk] to [snɛk], and *naked* [neɪkɪd] to [nɛkɪd]. This is the converse of the previously mentioned shift of [ɛ] to [eɪ] in *egg*, and so on.

Transcribe: dray, date, may, mate, rate, gate, Seine, fate, Fay, way, wall, say, lay, daily, eighty-six, locate, chaotic, wail, hate, lame, snake, fake, Kate, away, spill, pal, radio, rainbow, fame, freight, eighteen, Fayette, rate, delay, raze, February, Mrs., Parliament, billowed.

[ɒ]

hot—[hɒt]

The sound [ɒ] is used by British speakers and by many eastern Americans for the vowel in words like *hot*. It resembles a light, short [ɔ]. It is low-back, lax, and very slightly round. That is, [ɒ] is produced with the tongue in a position between [ɑ] and [ɔ]. The glossal muscles are lax and the lips slightly round.

This sound is known phonemically in American speech only in parts of New England, but it is the customary British pronunciation in *hot*, *got*, and all "short *o*" words, as well as in *what*, *quality*, *was*, and a few others spelled with *a*.

[23] The British spelling of *jail*, pronounced in the same way as *jail*.

[24] In the anglicized pronunciation, not the French pronunciation, which uses the pure [e].

Spelling of [ɒ] words: *a* as in *was*; *o* as in *hot*.

Transcribe in British and again in Southern speech: lot, hod, was, common, impossible, clipper, extra, Montreal, shot, whom, rotten, odd, Oxford, not, excitement, criticism, got, Hottentot.

[æ]--[ɛ] Words

There is a group of words spelled with *-arr-*, *-are*, *-air*, *-ear*, *-eir*, such as *carry*, *care*, *bear*, *stair*, *heir*, which may be pronounced with [æ] or [ɛ] depending on the individual speaker. The South and the general American area tend toward [æ], while the East prefers [ɛ]; but there is much individual variation in all sections. *There* and *their* are always [ðɛə, ðɛr].

Care may be transcribed thus: southern [kæə] or [kɛə]; general American [kær] or [kɛr]; eastern [kæə] or [kɛə].

Transcribe according to individual pronunciation: pair, heir, stair, air, lair; fair, fare; pallet, pullet, pellet; parry, Perry; ferry, fairy, faery; Terry, tarry; pear, bear, marry, Harry, mare, flair, flare.

Consonants

We have now presented all the common English vowels and diphthongs. Only words using these vowels and diphthongs, together with the simple consonants explained earlier, have been used in the transcription lists.

Since it becomes necessary to introduce here other consonants, the phonetic symbols of which are not the same as the orthographic symbols, a fresh reference to voiceless and voiced sounds becomes pertinent. All vowels are voiced, as are many consonants; that is, the vocal bands are in vibration. Other consonants are voiceless; that is, the vocal bands are quiescent.

Many consonants are in voiceless-voiced pairs. The pairs are, for all practical purposes, pronounced alike, except for the voicing and unvoicing factor. The pairs which we have already been using are [p–b], [t–d], [k–g], [f–v], and [s–z].

A better understanding of voiceless and voiced consonants will be had if students can feel the vibration of the vocal

bands. Place the fingers lightly against the cartilaginous structure of the throat, near the top of the "Adam's apple" or larynx. Pronounce the sounds—not the letter names—[s–z] and [f–v] in pairs. The vibration of the vocal bands for [z] and [v] can be felt with the finger tips. Another test is to pronounce the pairs with the ears stopped. The pairs [p–b], [t–d], and [k–g] can be tested in the same way, but less satisfactorily, because of their brief duration. In testing these, avoid letter-names, as before; likewise avoid making the [ə] sound after each consonant, for this may be confused with the real consonant sound.

There are four other pairs of voiceless-voiced consonants or consonant combinations. They are [θ ð], [ʃ ʒ], [ʍ w], and [tʃ dʒ]. A complete list of the pairs follows: [p b], [t d], [k g], [f v], [s z], [θ ð], [ʃ ʒ], [ʍ w], and [tʃ dʒ].

We shall now introduce a pair of voiceless-voiced consonants, the phonetic symbols for which are not identical with the corresponding orthographic symbols, namely, [θ ð]. The common name of [θ] is "theta;" that of [ð] is "crossed *d*."

[θ]

thin—[θɪn]

The sound [θ] is a voiceless, postdental (or interdental) fricative. It is made by (1) blocking the nasal passage with the soft palate,[25] (2) placing the blade of the tongue so that the edges will rest against the upper molars, the tongue tip being left free to touch very lightly the backs of the upper front teeth; and (3) forcing a stream of unvocalized air between the upper front teeth and the tongue tip. The lips are parted and unround.

Spelling of [θ] words: *th* as in *throw*.

Of the important western European languages, only English and dialectal Spanish contain [θ]. The sound is, accordingly, difficult for most foreigners learning English.

[25] This is to prevent the air stream from passing through the nasal passages and making the sound nasal. Only [m], [n], and [ŋ] are properly nasal in English.

Many of these are erroneously taught to protrude the tongue between the teeth so as to produce a complete interdental rather than a postdental fricative. The interdental friction produces a passable [θ], but it is awkward and grotesque, and has to be unlearned later.

In all large cities there are, among the lower economic strata, a considerable number of people, particularly boys and men, who use a variety of hard-boiled street gamin or gangster talk, one of the characteristics of which is the substitution of [t] for the voiceless *th* [θ] and [d] for the voiced *th* [ð]. (See section following.) The same is true in the South, not only in the cities, but sporadically in the villages and countryside. It is not that these speakers cannot pronounce the standard sounds (they do so regularly in words of relatively infrequent usage), but in words of frequent currency, such as *with, thing, the, this, that, these, those,* and *them*, they use the erroneous [t] and [d].

People of foreign birth or ancestry—mostly in the large cities, but also in the country areas where there are speech islands of homogeneous foreign origin, as in the French part of Louisiana, certain Scandinavian parts of north-central states, and the like—use the [t d] substitution not merely in the frequently used words, but wherever [θ] and [ð] occur. All such speakers must be taught to use the proper sounds.

Transcribe: thin, thumb, pith, pathway, toothache, both, booth, death, cloth, landscape, thrilled, thick, moth, theme, mouth, thought, thigh, thirsty, truth, method, handful, thesis, thane, Themistocles, thumb, third, ethereal, wraithlike, Golgotha, authoress, earthy, Sleeth, Spaeth, wrath, cloth, birth, berth.

[ð]

this—[ðɪs]

The sound [ð] is the voiced analog of [θ]. It is a postdental (or interdental) fricative. It occurs in such words as *the, then, these.*

The sound [ð] is produced in practically the same way as [θ], except that the breath stream is vocalized.

Spelling of [ð] words: *th* as in *those.*

The sound [ð] presents the same difficulties to certain native speakers and to practically all foreigners, except speakers of Spanish, as does [θ]. Its tongue position, like that of [θ], must be taught as usually postdental, not interdental.

Transcribe: the, this, than, they, thy, thine, seethe, halves, path, paths, cloths, heathen, earthen, them, thus, calves, that, those, withe, with, sooth, soothe, worthy, wives, these, thus, clothes, breathe, scathe, clothe.

A second pair of voiceless-voiced consonants is [ʃ ʒ]. The common name for [ʃ] is *esh* [ɛʃ]. [ʒ] is referred to simply by its sound, as heard in a word like *pleasure.*

[ʃ]

show—[ʃou]

The sound [ʃ] is a voiceless palato-alveolar fricative. It is made by (1) blocking the nasal passage with the soft palate; (2) raising the tongue against the lateral inner surfaces of the upper teeth, with the tip directed toward a point back of the alveolar ridge, leaving a horizontally wide but vertically narrow and constricted opening at the front; and (3) forcing an unvocalized breath stream through the opening. The lips are open and slightly rounded.

Spelling of [ʃ] words: *sh* as in *show*; *s* as in *sugar*; *ti* as in *action*; *ce* as in *ocean*; *ssi* as in *session.*

Speakers of immigrant origin or surroundings sometimes tend to pronounce [ʃ] in an overenergized manner, rendering it too prominent to be acceptable in standard speech.

Transcribe: shield, shady, shelf, shelves, shadow, shake, pshaw, shoals, shook, ocean, friction, Russia, rushes, finish, shoes, shut, sugar, blush, cash, shows, fish, splash, flesh, wash, faction, session, Prussia, Finnish, Shirley, specie, gracious, Gresham, cautious, cushion, thankful, ethical, worship, wishful, push, perish, parish.

[ʒ]

rouge—[ruʒ]

The sound [ʒ] is the voiced analog of [ʃ]. It is a palato-alveolar fricative and is made practically as [ʃ] is made, except that the breath stream is vocalized. It was originally a French sound borrowed during the Norman period, and it is not widely used in English.

Spelling of [ʒ] words: *g* as in *garage*; *j* as in *bijou* (French); *s* as in *closure*; *z* as in *azure*; *si* as in *occasion*.

Like [ʃ], [ʒ] may be pronounced in an overenergized fashion by speakers of non-English origin.

Transcribe: rouge, anesthesia, aphasia, prestige, milkman, Baton Rouge, ambrosia, Asia, beige, camouflage, bijou, garage.

[j]

you—[ju]

The sound [j] is a voiced palatal consonant, sometimes called, from its resemblance to [ɪ], a "semi-vowel." It is produced by (1) blocking the nasal passage with the soft palate; (2) raising the tongue into contact with the inner surfaces of the upper teeth all the way around except at the tip, the tip being turned down behind the lower front teeth; and (3) forcing a vocalized stream of air through the narrowly constricted opening between the hard palate and the tongue blade while the tongue is instantly and quickly moving toward the position of the vowel which follows.[26] Because of this motion away from its initial position, [j] is sometimes called a glide. This sound is often called *jot* [jɑt].

Spelling of [j] words: *y* as in *yes*; *i* as in *onion*; as the first sound in *usage*; immediately following *h* in *humor*; immediately

[26] If the tongue maintains a fixed position, without gliding toward a following vowel position, a fricative [j] is produced, as in French *fille* [fij].

following *d* in *due*, *t* in *tune*, and *n* in *new*, *neutral*, and *nutrition*.[27] (NOTE: After [d, t, n], [ɪ] is often heard instead of [j].)

Scandinavian speakers sometimes substitute [dʒ] (see page 69) for [j], apparently as an over-correction of their more common error of substituting [j] for [dʒ]. Thus, *union* may be pronounced [dʒunjən]; *Yale*, [dʒeɪl]; and so on. Spanish-speaking people sometimes make the same error, since, in some dialects, the Spanish [j] is changed to [dj] or [dʒ].

Transcribe: yield, yap, use, union, shadow, ambush, yawp, yodel, onion, unite, dew, abuse, polka, accent, euphonious, new, human, tune, duke, knew, Holmes, conflict, student, few, yowl, fuse, cute, followed, impose, curate, tumult, tube, Tuesday, constitution, stew, newspaper, substitute, numerous, nuisance, avenue, presume, suitable, enthusiasm.

[ŋ]

sing—[sɪŋ]

The sound [ŋ] is a voiced lingua-velar continuant. It is made (1) by blocking the oral passage with the back part of the tongue placed against the soft palate, and (2) passing a stream of vocalized air through the nasal passages.

Spelling of [ŋ] words: *ng* as in *song*; *n* as in *bank*. (Note that *ng* also spells [ŋg], as in *mango* [mæŋgo].) There are often confusing parallel spellings, as *singer*, containing only [ŋ], and *finger*, containing both [ŋ] and [g].

Transcribe: spring, ingle-nook, clung, drunk, drank, Englewood, string, sunk, England, swallow, English, account, history, fog, strong, singing, single, think, longest, thronging, length, harangue, strength, clink, clinking, brick, brink, breakfast, idea, guarantee, frost, bank, banquet.

While it is practically impossible to make an error in pronouncing [ŋ], it is possible and indeed very common throughout the United States to substitute [n] for it, *coming* [kʌmɪŋ] becoming *comin'* [kʌmɪn], and the like. In some sections, par-

[27] After *d*, *t*, and *n* in words like these, [j] occurs regularly in southern England, almost regularly in the South, nearly as often in the East, and occasionally in the general American area. Omission of [j] in words like these is not considered an error in America; that is, [nju, nu], [tjun, tun], [dju, du], are equally correct. The use of [j] after [s] [z] and [θ] as in *assume*, *presume*, and *enthusiasm* is known in the East and is common in England; [j] after [l] as in *absolute* is occasional in these two sections; but in the South and in the general American area, [j] after [s, z, l, θ] is not used.

ticularly in the South and in New York City, there is a peculiar substitution of [n] for [ŋ] in the two words *length* and *strength*, producing [lɛnθ] and [strɛnθ] instead of the correct [lɛŋkθ] and [strɛŋkθ].

The sound [ŋ] does not occur as a separate phoneme in some languages. In Spanish and Italian, for example, it is a part of the [n] phoneme, being considered a form of [n] by most careful speakers of these languages. It is always followed by either [g] or [k]. As a result, Spaniards and Italians are likely to pronounce *sing* as [sɪŋg] and *going*, [goɪŋk], the stress seeming to be favorable to [g] in *sing*, and lack of stress favorable to [k] in *going*. Some other speakers of foreign origin or surroundings add the excrescent [g] or [k] also, as in New York City, where the frequent combination *Long Island* is too often pronounced [lɔŋgaɪlənd]. Such speakers have to be taught to stop both the vibration of the vocal bands and the flow of the breath stream before breaking the occlusion of the tongue and soft palate, so that the break will be noiseless.

The converse of the erroneous insertion of [g] in words like *singer* is its omission in words like *finger*, producing [fɪŋər].

Vowels before [ŋ], as well as before the other English nasals [m] and [n], tend to be assimilated into nasality by an anticipatory premature opening of the soft palate for the approaching consonant. The vowel [æ] and the diphthong [aʊ]—too often mispronounced [æʊ]—are particularly subject to such nasalization.

Consonant combinations

English has two characteristic affricates (see page 69), which are closely blended consonant combinations. Like diphthongs, they each consist of two sounds so closely associated as to give the effect of one. They are [t] and [ʃ], joined to form the sound [tʃ] as in *child* [tʃaɪld]; and [d] and [ʒ], joined to form [dʒ] as in *judge* [dʒʌdʒ]. These sounds are customarily named by pronouncing their components. (It is to be noted that voiced consonants are joined to form

voiced pairs and voiceless consonants joined to form voiceless pairs. It is helpful to observe that with some exceptions, voiceless consonants prevail in the same consonant cluster, as [sts] in *mists*, and that the corresponding rule applies with voiced consonants, as [bz] in *sobs*.)

[tʃ]

chance—[tʃænts]

Spelling of [tʃ] words: *c* as in *cello*; *ch* as in *church*; *che* as in *niche*; *cz* as in *Czech*;[28] *te* as in *righteous*; *t* as in *adventure*.

There is some dispute as to whether the symbol for [tʃ] should be represented with a separate [t] and a separate [ʃ], thus, [tʃ], or by a connected [t] and [ʃ], thus, [t͡ʃ]. By using the one or the other, a person transcribing can express his opinion as to the degree of closeness of liaison between the two sounds. The sound [tʃ] occurs in Spanish, Italian, German, and Scandinavian, but not in French. French speakers may wish to substitute [ʃ]. Mexican school children in the Southwest often substitute [ʃ] also, apparently through confusing the spelling of words like *chaise* and *chair*.

Transcribe: chap, chance, batch, chew, aggressive, except, ghosts, syntax, cheap, cello, catch, sheep, church, giggle, Czech, rouged, dragged, should, clutch, wreck, ivory, Van Loon, Nobel Prize, Carnegie, Nazi, botch, chalk, broach, chuckle, birch, choice, chide, child.

[dʒ]

judge—[dʒʌdʒ]

Spelling of [dʒ] words: *d* as in *arduous*; *de* as in *grandeur*;[29] *dg* as in *judge*; *j* as in *judge*; *di* as in *cordial*; *dj* as in *adjacent*; *g* as in *giraffe*.

The affricate [dʒ] is made by combining a rather retracted member of the [d] phoneme with [ʒ]. It is sometimes repre-

[28] Final *ch* in *Czech* is [k].

[29] *Arduous* and *grandeur* may be pronounced without [dʒ]; that is, [ɑrdjʊəs] or [ɑ:djʊəs] and [grændjʊr] or [grændjʊə], as can be explained later when the remaining English consonants have been introduced.

sented by the symbol [d͡ʒ], the connecting ligature indicating the extremely close linking of the two sounds. In New York City and elsewhere, where foreign language influence is strong, [dʒ] as in *college* [kalɪdʒ], *judge* [dʒʌdʒ], and the like, is mistakenly unvoiced to [tʃ], producing [kalɪtʃ], [tʃʌtʃ]. Germans often substitute [j] for [dʒ], partly because the letter *j* in all Germanic languages, except English, is pronounced [j]. Thus, *just* becomes [just] or [jʊst]; *jump* becomes [jump] or [jʊmp] and so on. (See page 67.) But final [dʒ] will be [tʃ] with these speakers.

Transcribe: James, Jack, jog, jawbone, just, suggest, coquette, chasm, glimpse, joke, fudge, judge, smudge, June, figs, Xerxes, dodged, empty, longevity, Istanbul, sacrilegious, average, façade, viscount, accompaniment, budge, college, Jesus, gist, Jimmie, jewelry, drudge, Scrooge, gyrate, gyroscope, John, general.

[r]

ring—[rɪŋ]

It is impossible to give one key word for *r*. This elementary discussion will present (1) *r*, alone or in combination with other consonants, preceding a vowel; and (2) *r* within a word, or at the end of a word followed by another word beginning with a vowel. Examples: *ring* [rɪŋ], *bring* [brɪŋ], *very* [vɛrɪ], *our own* [aʊr oʊn].

The sound [r] is a non-fricative continuant, except after plosives, where it may be a voiced fricative, as in *dry* [draɪ], or a voiceless fricative, as in *try* [traɪ].[30]

Note: This [r] is voiced or voiceless depending on the combination of sounds. When alone or in combination with voiced consonants, it is voiced. It is usually voiceless, or nearly so, when it is combined with voiceless consonants. But this shifting of voice is not phonemic; that is, when voiceless [r] occurs, as it may do, e.g., in *trick* [trɪk], no change or disturbance of meaning takes place.

When voiced, [r] is most often made in the following way:

[30] In closer transcription, the voiced and voiceless fricative [r]'s are written [ɹ] and [ɻ].

(1) the nasal passage is blocked by the soft palate; (2) the tongue tip is pointed toward the place in the roof of the mouth where the palatal arch joins the gum ridge; or, alternatively, the middle of the tongue is arched toward the hard palate, and the breath stream is forced out over the tongue with or without friction, according to context—that is, according to whether a plosive precedes the [r]. The corresponding voiceless sound is made in practically the same way, except that the air is not vocalized. The velum closes the nasal passages.

Transcribe: run, rat, rag, rill, real, bring, friendship, French, ebb tide, Brock, brick, three, truck, trill, train, climax, conflict, caves, track, Jethro, pecan, apron, tree, throw, Elizabeth, contract, earthly, walnut, very, carry, our aunt.

Postvocalic *r*—Silent or Pronounced as [r]

Postvocalic *r*, either standing alone or followed by other consonants, is dropped by southern, British, and eastern speakers in stressed words or syllables after [ɑ], and by most easterners and Englishmen, with some southerners, after [ɔ]. (Other southerners pronounce it [ɔ], as will be seen later.) General American speakers, on the other hand, pronounce this *r*, and, indeed, every other consonantal *r*, as [r].

For example, general American speakers pronounce *car* [kɑr]; southern, eastern, and British speakers pronounce it [kɑ:], dropping the *r* and adding extra length to the vowel [ɑ] to take up the length of time which would have been given to [r] had it been spoken. As stated earlier, the phonetic symbol for this added duration is [:]. Beginners should understand that [:] does not replace the *r*, and is not a symbol for *r*. It merely records the increased time of the vowel. Let it be remembered that this southern, eastern, and British treatment of *r* occurs in accented positions.[31] Examples, with alternative pronunciations omitted:

[31] See page 72ff. for a discussion of *r* in unstressed positions.

	Southern, Eastern, British	*General American*
car	[kɑ:]	[kɑr]
farm	[fɑ:m]	[fɑrm]
Lord	[lɔ:d]	[lɔrd]
fork	[fɔ:k]	[fɔrk]
for	[fɔ:]	[fɔr]

Transcribe according to your own pronunciation: harm, dark, corn, park, are, horse, jar, art, dawn, cart, tart, consort, lark, hark, born, Arctic, Antarctic, birth.

Postvocalic *r*—Pronounced [ə] or [r]

Southern, eastern, and British speakers pronounce final *r* (final alone or followed by other consonants in a stressed word or syllable) as [ə], in words where the diphthongs [oʊ], [aʊ], and [aɪ] immediately precede *r*, as in *four*, *hour*, and *fire*. Likewise, if any of the pure vowels except [ɑ], and sometimes [ə], precede *r*, the *r* is pronounced [ə].

The transcription of words like *four*, *hour*, and *fire* is a debatable issue. Those who speak slowly, including those who have any degree of drawl, doubtless say, [foʊwə], [aʊwə], and [faɪjə]; while more rapid speakers doubtless say [foə], [aʊə], and [faɪə]. Except for narrower transcriptions than elementary work presupposes, the transcriptions [foə], [aʊə], and [faɪə] are probably the more satisfactory. But southern speakers have to be on guard against omitting [ə] from words like *four*, *more*, *door*, since [fo, mo, do] are incorrect. So also is [jo] (from [joə]) as a substitution for *your* [jʊə].

After [ɪ], [ɛ], [æ], and [ʊ],[32] orthographic *r*, final (with or without accompanying consonants) in a word or syllable, is, as stated above, rendered in southern, eastern, and British speech as [ə]; for example, *here* [hɪə], *there* [ðɛə], *care* [kæə, kɛə],

[32] Except in forced utterance or in the utterance of highly individualized speakers, [i] and [u] are reduced to [ɪ] and [ʊ] before *r* in the same syllable. Thus, *fear* is [fɪə, fɪr]; *poor* is [pʊə, pʊr]. Most dictionaries disregard this lowering influence of *r* and indicate these and similar words as pronounced with [i] and [u]. Similarly, [eɪ] becomes [ɛ] before *r* in the same orthographic syllable. But there are close analogs in dissyllables like *mayor*, *layer*, and the like, where [eɪ] occurs.

sure [ʃʊə]. (See chart on postvocalic S., E., and Br. *r*.) In the case of [ə], the *r* is pronounced as [ə] or is silent, according to the degree of stress in the sentence. Thus a speaker may say, *I see a horse* [aɪ si ə hɔːs]. Another may answer, *A horse! It's a cow.* [ə hɔəs! ɪts ə kaʊ]. Words like *for* and *corn*, are similarly pronounced [fɔː, fɔə] and [kɔːn, kɔən], according to conditions of stress within the sentence. This latitude of variation probably prevails more in the South than in the East or in England. All the *r*'s discussed above are, of course, pronounced [r] in general American.

Transcribe: our, dire, pyre, sore, floor, snore, chore, mourn, poor, horn, morn, forth, fourth, where, beer, fear, tear, their, dear, pierce.

Since [ɜ] and [ɚ] are used only in accented positions, another set of symbols is used when *ar*, *er*, *ir*, *or*, *our*, *ur* and *yr* occur in unaccented syllables. Southern, eastern, and British speakers use [ə]. General American speakers use [ɚ]. Examples are as follows:

	Southern, Eastern, British	*General American*
tartar	[tɑːtə]	[tɑrtɚ]
order	[ɔːdə]	[ɔrdɚ]
tapir	[teɪpə]	[teɪpɚ]
labor	[leɪbə]	[leɪbɚ]
labour (Br.)	[leɪbə]	[leɪbɚ]
murmur	[mɜːmə]	[mɜmɚ]
martyr	[mɑːtə]	[mɑrtɚ]

General American speakers have to be on guard not to use [ɚ] as the final vowel of words like *potato*, *window*, which are often rustically rendered [poteɪtɚ], [wɪndɚ].

Transcribe in general American and in southern, eastern, and British speech: dapper, caper, number, dipper, Arthur, author, sleeper, earshot, earnest, earmark, chalk, stone, change, scrapbook.

TABLE 2

Pronunciation of Southern, Eastern, and British Post-vocalic *R*, I. E., Final and Preconsonantal *r* *

Sounds not followed by *r*	Sounds followed by *r*		
	Pronounced [ə]	*Silent or Pronounced* [ə]	*Silent*
i	ɪ fear [fɪə] mere [mɪə] cheer [tʃɪə]	ɔ cord [kɔ:d] cord [kɔəd]	ɑ car [kɑ:] card [kɑ:d]
e–eɪ	ɛ there [ðɛə] fare [fɛə] fair [fɛə] bear [bɛə]	ɔ (Br.) four [fɔ:] four [fɔə] door [dɔ:] door [dɔə] more [mɔ:] more [mɔə]	ɜ herd [hɜ:d] heard [hɜ:d] bird [bɜ:d] word [wɜ:d] journey [dʒɜ:nɪ] Myrtle [mɜ:tl̩] burn [bɜ:n]
	æ hare [hæə] fair [fæə] bear [bæə] Note: The choice between [ɛ] and [æ] varies among regions, communities, and individuals.		ə mortar [mɔ:tə] mother [mʌðə] tapir [teɪpə] labor [leɪbə] labour (Br.) [leɪbə] murmur [mɜ:mə] martyr [mɑ:tə]
u	ʊ sure [ʃʊə] poor [pʊə]		
Note: In average English speech of conversational speed, the presence of *r* after [ɪ] reduces the latter to [ɪ̯], [e–eɪ] to [ɛ̯], and [u] to [ʊ̯].	aɪ fire [faɪə]		
ʌ	aʊ hour [aʊə]		
	o (S.) four [foə] door [doə] more [moə]		

*Note: "Final" and "preconsonantal" refer to position in a syllable, as in *ar-tist, art-ful*, as well as in a word, as in *car, cart*. Linking *r* is excluded, both within a word, as in *very*, and between words, as in *her aunt*.

Linking or Intervocalic *r*

A special case of *r* occurs when a word ends in *r* and is followed by a word beginning with a vowel. This *r* is pronounced by all groups of speakers.[33] It is a glide or bridge between the vowels. It effects a liaison between the preceding and following vowels as does the French *s* [z] in *vous avez* [vuz ave]. In southern and much eastern speech, *over and over* is transcribed [oʊvɚ ənd oʊvə]. *Very* contains a linking *r* between the vowels [ɛ] and [ɪ], thus [vɛrɪ].[34]

In connection with the use of [ʌ], [ɜ], and [ɝ] with the linking [r], special consideration has to be given to words like *hurry, furry, stirring,* and the like. It is evident that *hurry,* for example, can be transcribed [hʌrɪ], [hɜrɪ], and [hɝɪ]. Excellent authorities have undertaken to allocate certain of these pronunciations to specific areas or classes.[35] There is evidence that many southerners say [hʌrɪ]; most general American speakers say [hɝɪ]; easterners use [hʌrɪ, hʌɾɪ] and [hɜrɪ, hɜɾɪ]. Pending extensive surveys, it is probably best to recognize all of these pronunciations as in good standing and as varying from individual to individual as well as from section to section.

In dialects where the linking [r] is used, speakers become much accustomed to the sound as a liaison between vowels. Accordingly, where they encounter a word ending in a vowel and followed by another beginning with a vowel, they suffer a strong temptation to use an intrusive [r]. Thus, *the idear of it* [ðɪ aɪdɪr əv ɪt] becomes possible. The error is strengthened by the fact that many words have two pronunciations,

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[33] Despite the fact that many southern speakers do not pronounce the link consistently, either within words like *very,* or in connecting words like *far away,* the best southern speakers use it.

[34] The British and extreme eastern pronunciation is [oʊvɚ ænd oʊvə] and [vɛrɪ]. See "One-Tap Trill," p. 77.

[35] George Phillip Krapp, quoted by J. S. Kenyon, *American Pronunciation* (1930 edition), page 112, states that [hɜrɪ] is not often heard in cultivated speech. Kenyon denies this statement and says that the sound [ɜ] is frequent and that it prevails in the North. Hans Kurath, *The Linguistic Atlas of New England,* Vol. II, (Brown University, Providence, R. I., 1939), Map 123, records *furrow* as [fɜro], [fʌro], and with several other variations.

without and with the link, as in *war party* [wɔ: pɑ:tɪ] and *War of the Roses* [wɔr əv ðə rouzɪz]. If *war* may be both [wɔ:] and [wɔr], it seems superficially reasonable that *law* should be both [lɔ:] and [lɔr], as in *law and order* [lɔr ənd ɔ:də]. Once the intrusive [r] becomes attached to a word, it may cling to it as an excrescence even in non-linking positions, as in *this is the law* [ðɪs ɪz ðə lɔr].

Transcribe: our elbows; her eyes; her own; her aunt; mirror in; your arm; carry; marry; her error; ferry; worry; idea of; her pet; curry; her cat; okra and corn; China dolls; calla lilies; our overalls; her uncle; over on; over and over; vanilla ice cream; Havana is; Jamaica Avenue; China and India; India office; drawing; soda and milk; the idea of it; he saw it; law and order; Alabama and Florida.

It is evident that the [r] phoneme includes many sounds, beginning at the extreme front with a bilabial trill and ending at the extreme back with a uvular trill. Even the lingual [r]'s which lie between are too numerous and different for a brief explanation. We have undertaken, therefore, to describe the limited number of [r]'s which are necessary in English, almost as if they were separate sounds.

A form closely related to initial [r] occurs in the general American pronunciation in postvocalic positions, as in *par* [pɑr] and *part* [pɑrt]. In pronouncing this [r] the tongue points toward the roof of the mouth at a position slightly posterior to that described for the typical form of the sound. It seems also not to rise quite so high as with the typical form. In other words, this [r] is almost completely vocalic and could probably be regarded as a vowel rather than a consonant. This [r] has sometimes an exaggerated and provincial form called the "burred" [r]. In making the burred [r], the speaker directs the tip of the tongue toward the roof of the mouth to a point very nearly as far back as the juncture of the hard and soft palates. In many instances the tip of the tongue is actually curved backward upon the blade of that organ. The resultant sound is harsh and guttural. Since it is essentially an exaggeration of the very

pleasing and proper [r] indicated previously as the general American pronunciation of [r] in *par* and *part*, the burred [r] is usually thought of by eastern and southern Americans and by Englishmen as being the characterizing element of general American speech. Of course, this opinion is erroneous. The burred [r] belongs only to the illiterate and careless. The [r] used by careful speakers in the general American area is essentially the same as the initial [r] used by all English speakers.

In New York City there occurs as a substitute for [r] a labiodental fricative which gives the acoustic effect of [f] or [v]. It is found after plosives and between vowels, as in *previous* and *very*, which are pronounced by some as [pfivɪəs] and [vɛvɪ].

In the South the omission of the linking [r] between vowels within a word constitutes a major error, as in [vɛɪ] for *very*, [kæɪ] for *carry*. The omission of the link between words also deserves correction; [hɜ: ænt] for [hɜr ænt] is conspicuous.

Transcribe: ring, bring, drink, green, Reno, rain, brain, render, Brent, ran, brand; grand, rock, crock, raw, crawl, roll, troll, root, ride, brood, rough, brush, truck, grudge; far away; our own; here it is; there are; fear of; war of; war over; very, merry, marry, carry, worry, hurry, ferry, environment, character; peer, sheer, pair, pear, part, port, par, pure.

[ɾ]

merry—[mɛɾɪ]

The symbol [ɾ] represents a one-tap trill. It is made by causing the tip of the tongue to touch the gum ridge a single time, or to make a gesture of doing so without actually touching. It is the sound used in British speech and, to some extent, in the speech in eastern America when [r] appears between vowels within a word, as in *very* [vɛɾɪ], or at the end of a word which is followed by another word beginning with a vowel sound. Examples: *over and over* [oʊvəɾ ənd oʊvə] and *over he goes* [oʊvəɾ̄ ɪ goʊz].

Since American medial [t] and [d] are very light and are made almost identically with [ɾ], it is often difficult to distinguish between the American *jetty* or *Jeddy* and the British *Jerry*, all three being almost the same, that is, [dʒɛɾɪ].

Transcribe: far away; hear it; where are you; mirror up to nature; acquire and beget; Barrymore, very, marry, carry, hurry, worry, arrogant.

Transcribe in general American: fern, bird, work, burner, Germany, urge, term, churn, earnest, burly, church, Earl, curler, shirker, jerker, hurrying, pearl, girl, churl, Swire, world, word, heard, herd, journey, irk, quirk, burst, first, whirl, unfurl, hurler.

Transcribe in southern American, eastern American, or British: are, car, char, jar, art, cart, chard, jarred, Arthur, Martin, hour, our, flower, flour, cower, order, ardor, four, door, oar, o'er, over, Dover, cover, more, course, coarse, horse, hoarse, corps, corpse, chore, care, hair, pair, pear, rare, roar, number, slumber, roarer, pourer, fourteen.

CHAPTER 5

Pronunciation and Phonetics (Continued)

Stressing and unstressing

Certain vowels occur in English only in stressed positions. The table below shows the vowels and diphthongs which are used in stressed syllables only and those used in unstressed syllables only. Stress is here used to refer to both primary and secondary stress in polysyllabic words, and to sentence stress on monosyllables.

The sound [ɪ] appears in both columns by reason of the fact that in broad transcription (that is, phonemic transcription, which uses only one symbol for all members of a phoneme) the symbol represents two quite different members of the [ɪ] phoneme. In narrow, that is, phonic, transcription, some differentiating form would be used.

Stressed		*Unstressed*	
[i]	[aɪ]	[ə]	(by far the most frequent unstressed sound)
[ɪ]	[ʊ]		
[eɪ]	[oʊ]	[ɚ]	
[ɛ]	[u]	[ɪ]	(very frequently used)
[æ]	[ɜ]	[o]	(only occasionally used)
[ɑ]	[ɝ]	[e]	(only occasionally used)
[ɔ]	[ʌ]	[a]	(occasionally used as a lightly stressed form of the personal pronoun *I* [aɪ]
[aʊ]	[ɔɪ]		

Trends in unstressing

Pure vowels in unaccented positions become [ə] or [ɪ].

to — [tu], [tʊ], [tə]
the — [ði], [ðɪ], [ðə]
He was cold — [hi wəz koʊld]
Was he? — [wɑzɪ?]
committee — [kəmɪtɪ]
Washington — [wɔʃɪŋtən, wɑʃɪŋtən]
association — [əsoʊsɪeɪʃən]

The diphthongs [ou] and [eɪ] reduce to their first components, the pure vowels [o] and [e].

orate — ['ouret]
oration — [o'reɪʃən]

Unstressing in suffixes

In such words as *bucket* and *glasses*, the vowel of the final syllable may be either [e] or [ɪ]. Thus, *bucket* is [bʌkət] or [bʌkɪt]; *glasses* will be [glæsəz] or [glæsɪz]. The majority of southern, British, and eastern speakers use [ɪ], and the majority of general American speakers use [ə]. Endings in *ace, ad, as, ase, ate, ed, en, es, ess, et, ice, id, ip, ite, uce* vary in the same way. Examples:

	Southern, Eastern British	*General American*
Dallas	[dælɪs]	[dæləs]
purchase	[pɜ:tʃɪs]	[pɜtʃəs]
Alice	[ælɪs]	[æləs]
pallid	[pælɪd]	[pæləd]
palace	[pælɪs]	[pæləs]
palate	[pælɪt]	[pælət]
useless	[juslɪs]	[jusləs]
churches	[tʃɜ:tʃɪz]	[tʃɜtʃəz]
thicket	[θɪkɪt]	[θɪkət]
stilted	[stɪltɪd]	[stɪltəd]
lettuce	[letɪs]	[letəs]

Transcribe according to your own speech: radio, polo, pewee, police, tobacco, slumber, Allen, Dallas, whisper, reaper, potato, tomato, cement, adult, address, defense, gondola, endorse, detour, detail.

Transcribe according to your own speech: follow, window, status, apparatus, handkerchief, strength, patron, Texas, murder, constable, era, penalize, material, peony, Monroe, Detroit, picture, genuine, nature, furniture, memorable, idea, abdomen, incline, perfume, picture, library, recognize, athletic, governor, president, literature, comparable.

Unstressing in breath groups and sentence groups

In conversation, reading, or public speaking, various words within the sentence will be stressed and others unstressed. The

words most frequently unstressed are the prepositions, articles, pronouns, conjunctions, frequently used main verbs, and auxiliary verbs. Examples:

Article and verb. *The boy is well* [ðə bɔɪz wɛl].
Pronoun. *I saw him* [aɪ sɔ ɪm].
Conjunction. *He and I will go* [hɪ ənd aɪ wɪl goʊ]. (Or [nd] or [n̩].)
Auxiliary verb and preposition. *He has been to town* [hiz bɪn tə taʊn].

Unstressing is peculiarly an English-language phenomenon, whereby the vowel of any unstressed syllable may, in summary, become one of three things:

1. A short form of itself, as [o] in *obey* [obeɪ].
2. [ɪ], as in *Has he come?* [hæz ɪ kʌm].
3. [ə], as in *about* [əbaʊt].

It does not matter whether the syllable is unstressed because of its position in a polysyllabic word, or in a breath group or sense group. Phonetically speaking, these groups are merely long words, and what are ordinarily called words become only syllables in the longer groups. Thus *was*, which, when alone, is pronounced [wɑz], may become merely [wəz] in *He was gone* [hi wəz gɔn].

This principle of unstressing is hard for most foreigners to grasp, because in their own languages most syllables are carefully and precisely uttered. Often a well-lessoned foreigner will speak every English word perfectly, and yet have an egregious foreign accent without understanding why he has it. Of course, the reason is that he fails to observe unstressing. Instead of saying [brɪŋ ɪm ɪntə ðə haʊs], he probably says, [brɪŋ hɪm ɪntu ði haʊs]. He must learn that it is a mark of good English speech to be careful to pronounce many syllables—the unstressed ones—with great carelessness, or, at least, casualness.

The difficult subject of English rhythm is largely mastered for foreigners when the problem of unstressing is mastered. Even some English speakers need to learn this, for some

people, whenever they read, recite, or speak the lines in a play, tend to pronounce unstressed *a, to, into, from, for, the,* and so forth, with the precision of first-reader children. Such false precision gives a deadly ineptness to their speech that all but reflects on the intelligence of the speakers.

New York City speakers and, to a lesser extent, urban speakers throughout America, often pronounced unstressed *him* as [əm] instead of the correct [ɪm]. Thus, *I hit him* [aɪ hɪt əm] for [aɪ hɪt ɪm]. In extreme cases, this indefinite syllable [əm] is said to be used also for *it* and even for *her.* It originates, presumably, as an unstressed contraction of *them,* that is, *'em* [əm].

Restressing

Related to the problem of unstressing is that of restressing. The latter term is an arbitrary one referring to the fact that stressed vowels which have changed form on being unstressed, appear, on being restressed, as some other vowel than the original. Thus, *was* [wɑz] may be unstressed to [wəz], and then erroneously restressed to [wʌz] instead of the correct original [wɑz]. In singing, particularly, it is necessary to observe the rule that a vowel, when restressed by reason of musical accent or duration, must be pronounced in its original stressed form, not some other.

English consonants

It is now in order to discuss the formation of those consonant sounds omitted earlier because their symbols were identical with corresponding orthographic symbols.

[p]

peel—[pil]

Spelling of [p] words: *p* as in *ship*; *pp* as in *puppet*; *gh* as in *hiccough.*

The sound [p] is a voiceless, bilabial, aspirate stop-plosive. It is made by (1) closing the lips and blocking the nasal pas-

sages with the soft palate; (2) forcing unvocalized air up from the lungs to form pressure in the mouth; and (3) opening the lips to explode the air in a puff like an [h]. The puff does not blend with the sound which follows it.

Under certain conditions the explosion may be omitted—for example, when the speaker remains silent, with closed lips, after pronouncing a word ending in [p]. The explosion is delayed in compound words or adjacent words when the first word ends, and the second begins, with *p*. This delay is the characteristic of long *p* and is written thus: [p:]. Example, *top part* [tɑp:ɑrt] or [tɑp:ɑ:t].

The possibility of omitting the explosion of [p] medially is a very convenient one for preventing the appearance of affectation. If one says *rope threads* thus, [roup̚ θredz], allowing the compressed air of [p] to be used without plosion in the production of [θ], the effect is smooth, fluent, and natural. This is an important matter; the principle just explained may be applied to any of the plosives.

Aspiration and unaspiration

Aspiration is strongest in English when voiceless plosives are in initial position, as in *pan* [pæn]; next strongest in final positions, as in *map* [mæp]; and weakest in medial positions, as in *happy* [hæpɪ]. It is so weak in medial positions that the puff is little, if any, stronger than that of voiced plosives.

In many foreign languages the aspiration patterns differ from those of English, so that voiceless plosives are unaspirated. The effect of aspiration is difficult for any foreigner in whose language [p] is unaspirated. But if he does not aspirate English [p], the acoustic effect is that of English [b].

It was just explained that when two words, the first ending and the second beginning with the same consonant, are pronounced at conversational speed, the phenomenon called a "long consonant" occurs; for example, *drip pan* [drɪpːæn]. This is to be distinguished from doubled consonant sounds,

as in *Judge Jacobs* [dʒʌdʒ dʒeɪkəbz]. Orthographically doubled consonants within words, as in *tapping* and *fill*, are pronounced as short consonants phonetically, thus: [tæpɪŋ] and [fɪl].

Sometimes [p] is erroneously voiced, as in [bæbtɪst] for *Baptist*.

Transcribe: parsnip, leper, tap, pen, peoples, Polly, scrimping, Paisley, hippopotamus, pelican, wallop, sweeping, insurance, perplex, perpetual, pampas grass, lollypop, pageant, lappet, hip pocket, peep-peep, lip paint, pagoda, pavement, peach, deeper, peer, pigeon, dipper, dripper, paid, draping, ape, petting, inept, step, patted, apple, strap, path, pass, past, charger, harp, put, dropper, stop, pauper, post, open, hope, pool, drooping, stoop, pudgy, upper, cup, pearl, Burpee, turpentine, swipe, poignant, pouting, duping, top part, top fast, stop pushing, dip more, baptize, rapid, rabid, rabbit.

[b]

bead—[bid]

The sound [b] is a voiced, bilabial, unaspirate stop-plosive. It is produced in practically the same manner as [p], with the following exceptions: (1) the vocal bands are in vibration to form a voiced consonant; (2) the sound [b] glides into the following sound without the puff of air like an [h] noted in the production of [p].

The explosion of [b] may be delayed to produce a long [b] in compound words or in adjacent words when the first word ends and the second begins with *b*.[1] Example, *grab bag* [græbːæg].

Spelling of [b] words: *b* as in *bed*; *bb* as in *babble*; *pb* as in *cupboard*.

Even when final, [b] ends much less plosively than [p]. Compare *cup* [kʌp] with *tub* [tʌb]. Of the two differences, the unaspirate characteristic of [b] is probably as important

[1] Lengthening is possible with the consonants discussed in the following pages, but no further mention of it will be made.

as the voiced characteristic. It is likely that we distinguish [p] from [b] as much by comparing their aspiration attributes as by comparing their voiceless and voiced qualities. At any rate, when a South German pronounces the English word *peat* with his native [p], the word sounds like *beat* to English ears, despite the fact that his [p] is voiceless. Attention to the principle of aspiration is exceedingly important in dealing with the speech of foreigners. To put the whole case in slightly different words, we must not regard [b] merely as voiced [p]. It is much more than that in English; it is voiced [p] with the aspiration of [p] withdrawn, and this withdrawal is as noticeable to the ear as the voicing itself. As will be seen, all that has just been said will apply to each of the other voiced and voiceless pairs of stop-plosives—namely, [t–d] and [k–g].

In some contexts, the sound [b] may be correctly pronounced with the explosion omitted, as in the case of [p]. Likewise, the plosion of [b], such as it is, may take place practically simultaneously with a following sound, as in *hob nails* [hɑ-bnelz] or [hɒ-bnelz]. This device prevents a labored or affected pronunciation, such as [hɑb ə nelz].

Transcribe: baker, broom, bison, beast, wobble, lobster, trouble, ruble, tub bath, stab back, rub back, stubble, trombone, sobbing, valuable, September, February, dribble, cub bear, job boy, scrub board, blue bird, commodity, rub brush, conscience, connection, consensus, lieutenant, maintenance, marshmallow, beat, feeble, scribe, bit, ribbon, crib, bait, able, bet, Jebb, bat, babble, Ahab, bath, brand, band, ball, strawberry, daub, boat, robing, lobe, butcher, bulldoze, book, boom, tubing, cub, but, rubber, bird, curbstone, blurb, bicarbonate, ascribing, jibe, bounce, boil, cabman, dab batter.

[t]

time—[taɪm]

The sound [t] is a voiceless, tongue-tip, alveolar, aspirated stop-plosive.

The production of [t] is as follows: (1) the speaker simultaneously closes the nasal passages at the rear with the

velum and prevents the exit of air through the mouth by placing the tip of the tongue against the inner surface of the gums, back of the upper teeth; (2) compresses the air; and (3) allows the air to escape suddenly over the tip of the tongue.

Spelling of [t] words: *t* as in *top*; *tt* as in *bottle*; *ght* as in *eight*; *phth* as in *phthisis*; *pt* as in *ptomaine*.

Foreigners who use the unaspirated [t] will seem, to English ears, to be saying [d]. The English [t] is very strongly aspirated, except in medial positions, where, e.g., *notice* is often pronounced [noʊdɪs]. This substitution is seldom perceived because the weak aspirated characteristic of medial [t] is so like that of [d] that the sounds are readily confused.

The sound [t] is very unstable as to its exact position in the mouth. [t] can be interdental, as in *eighth*; dental, as in Spanish *tarde* [tarđe]; alveolar, as in *team* [tim]; without explosion, as the final *t* in *fat* when the tongue is not immediately removed from occlusion with the palate; with a unilateral or bilateral plosion when followed by a syllabic [l], as in *bottle* [bɑtl̩] or [bɒtl̩]; with a nasal plosion when followed by syllabic [n], as in *button* [bʌtn̩]. Therefore, it can be seen that the term alveolar applies only to the average *t*. The phonetic symbol [t] is used to designate all types except the dental. Dental [t] is expressed thus: [t̪]. Students of foreign origin must beware of it.

Where [n] follows [t] closely, American pronunciation frequently substitutes the glottal stop [ʔ] for [t], thus: [sɛnʔ n̩ts]. In several dialects, notably Cockney, New York City speech, and Scotch, the glottal stop is very much used as a substitute for [t], as in *battle* [bæʔl̩]; also for [k], as in *bacon* [beɪʔn̩]; and more rarely, for still other stops. In New York City also, [t] is sometimes affricated, producing [ts], as in [tsu] for *too*; it is likewise often overenergized.

Slovenly speakers sometimes omit [t] from words like *question* and *digestion*, producing [kwɛʃən] and [dədʒɛʃən]. Final [t] is also often dropped, as in [nɛks] for *next*, [lɛf] for *left*;

and the [t] is dropped from difficult clusters, like *sts* in *consists*, which is mispronounced [kənsɪs:].

As with [p] and [b], it is often more correct, when speaking at a conversational rate of speed, to allow the plosion of the [t] to occur almost simultaneously with the utterance of the next sound, as in *last sign*. The pronunciation [læs-tsaɪn] will seem much more natural and fluent than a labored spelling-pronunciation which would probably sound like [læst ə saɪn]. This labored pronunciation of [t] may affect medial [t], producing a lengthened or strongly aspirate [t] unnatural in American English; thus [sɪt:ɪ] or [sɪtʰi] for *city*. In New York City this over-pronunciation is common. Actually, American medial [t], as mentioned before, is practically undistinguishable from the one-tap trill [ɾ]. An alternative, also faulty, to the overpronounced medial [t] is the voicing of [t] to [d] previously mentioned. This may be heard in [sɪdɪ] for *city*, and [sædɪsfækʃən] or [sædəsfækʃən] for *satisfaction*.

Transcribe: matter, teach, timid, Toledo, fantastic, token, canter, mental, mulatto, heighten, tantalize, attempt, appetite, titillation, rat trap, attempt to, set to, fat tigers, library, company, practically, hind, next, left, mind, find, resists, ghosts, mists, persists, fists, wrists, twists, quests, clasps, swift, lift, loft, coughed, team, beating, fleet, timber, minted, flint, tame, mated, abate, tense, metonomy, roulette, tamper, rattle, rate, tarn, artist, cart, tall, autumn, aught, toper, rotation, note, took, put-in, foot, tool, looted, shoot, tuck, utter, turn, hurting, Bert, toilsome, outtowered, attired, cut more, that time, eighth, rattle, rotten, hunter, pretty, jetty, sitting, Siddons, notice, satisfaction, protestant, digestive, questionable.

Transcribe: Connected discourse as assigned by instructor.

[d]

dime—[daɪm]

The sound [d] is a voiced, tongue-tip, alveolar, unaspirated stop-plosive. It is produced in practically the same way as [t], with the following exceptions: (1) the air stream is voiced; (2) there is no aspiration.

Spelling of [d] words: *d* as in *dog*; *dd* as in *add*; *ed* as in *mentioned.*

Like [t], [d] is very unstable as to tongue position. The following variations are easily noticed: (1) dental [d̪], as in French *dame* [dam̪]; (2) without plosion, as in *bud* [bʌd̚], provided the tongue is not removed at once from contact with the alveolar ridge; (3) with a bilateral plosion, as in *paddle* [pædl̩]; (4) with a nasal plosion, as in *Haddon* [hædn̩]; and (5) simultaneous plosion with the utterance of [ð], as in *this and that* [ðis ænd ðæt].

A labored pronunciation of [d], as in *and that* [ændə ðæt], can often be avoided if the slight plosion of the [d] is made, as previously explained, practically simultaneously with the pronunciation of the following sound, thus: [ænd͡ ðæt]. Any overprominent, overenergized pronunciation of [d] is to be avoided. Students of German or Jewish origin should avoid unvoicing final [d]; for example, *raid* [reɪd] must not be changed to *rate* [reɪt].

Likewise, the affricate [dz] must not be substituted for [d], as in [dzu] for *do* [du].

Most speakers of foreign origin must beware of dentalizing [d]; it is nearly always alveolar.

In the South and, to a lesser extent, elsewhere, after nasals and [l], the sound [d] is often omitted, producing the substandard [koul] for *cold* [kould], [hæn] for *hand* [hænd], [fil] for *field* [fild], and so forth.

Transcribe: dynamic, dream, data, darling, danger, trader, adequate, fodder, educate, midday, David, deemed, dimmed, darned, tried, heed, head, lead, dazed, mad dog, side door, edible, dedicated, presidential, deal, dill, dale, dense, delicate, daffodil, dolly, dawdle, dole, duplicate, dull, dermis, Eden, idiom, Edison, Addison, oddity, audit, odium, dudish, udder, curded, feed, bid, raid, bread, brad, trod, broad, strode, good, rude, mud, heard, dried, drowned, adroit, pebble, and that, had not, add dainties.

Transcribe: A paragraph of connected discourse as assigned by instructor.

[k]

call—[kɔl]

The sound [k] is a voiceless, lingua-velar, aspirated stop-plosive. It is made by (1) closing the velum and raising the back of the tongue into air-tight occlusion with it; (2) creating air pressure behind this articulatory dam; and (3) lowering the tongue to permit the explosion to pass through the mouth.

Spelling of [k] words: *k* as in *Kate*; *kh* as in *Khan*; *c* as in *call*; *cc* as in *staccato*; *ch* as in *ache*; *ck* as in *aback*; *q* as in *squaw*; *qu* as in *quay*; [k] plus [s] represents the sounds of orthographic *x*.

The [k] phoneme contains these and many other [k]'s, depending upon the point of contact of the tongue with the roof of the mouth; for example, compare the [k]'s of *keel* and *call*. It also includes a [k] without explosion. Further, [k] may be exploded simultaneously with the following sound to avoid the appearance of [ə] after a [k], as in *black dog* [blæk͡k dɔg].

Inexpert speakers drop one of the sounds from the difficult groups *skt* and *sks*. Thus *asks* [æsks] becomes [æsk] or [æs:], and *asked* [æskt] becomes [æsk] or [æst]. Louisiana French speakers exchange the positions of [sk] by metathesis, so that *ask* becomes [æks].

As stated before, the glottal stop is occasionally used for [k] in New York City. Thus *taken* [teɪkən] becomes [teɪʔn̩], and so forth.

Transcribe: kitten, kid, kettle, coil, Colorado, escape, skin, queue, liquor, thicken, Asia Minor, sackcloth, sickness, creek, pickle, Basque, neck, nick, can, New Orleans, black cats, Khan, sank, bookkeeper, box, cane, tallow, basks, basked, tasks, flasks, flax, masked, masks, Max, keenest, kindred, case, Ken, casts, card, cord, comb, cushion, coolie, coot, cute, cutter, curd, equal, aching, eccentric, exquisite, asks, asked, occulists, awkwardest, cuckoo, making, Macon, taking, forsaken, dukedom, duckling, dirk edge, shriek, quick, wake, strength, Jenks, blackest, block, chalk, joke, rook, fluke, buck, Burke, hack carefully, bookcase.

[g]

go—[go]

The sound [g] is a voiced, lingua-velar, unaspirated stop-plosive. It is made practically like [k] with the following exceptions: (1) the air stream is vocalized, (2) the plosion is unaspirated.

Spelling of [g] words: *g* as in *go*; *gg* as in *egg*; *x* (first element of [gz]) as in *example* [ɪgzæmpəl, ɪgzampəl] when spoken rapidly.

Like [k], [g] is also unstable as to the point of contact of the tongue and soft palate. When the [g] in *geese* is compared with the [g] in *gall*, the former is seen to be a front [g], while the latter is a back [g]. The symbol [g] is ordinarily used for both front and back [g].

As in the case of all the other stop-plosives, the explosion of [g] may be omitted. Also the sound may be pronounced in liaison with a following consonant so as to avoid the appearance of an excrescent [ə], as in *big Tom* [bɪg̚ tʊm, bɪg̚ tʊm].

Students who speak any dialect of German, including Yiddish, or whose parents or associates speak one of these dialects, will need to be on guard against unvoicing final [g] to [k], as when *big* [bɪg] becomes [bɪk]. The same speakers may erroneously omit [g] from *younger*, *longer*, *stronger*, *youngest*, *longest*, *strongest*, *finger*, *linger*, *mingle*, and the like. They should, for example, say [dʒɪŋgəl], not [dʒɪŋ] for *jingle*.

Many southerners and some others omit the [g] in *recognize*.

Transcribe: gift, geese, guest, grasp, gay, big, pig, Chicago, Bilbao, aggravate, wiggle, finger, bigot, rugged, druggist, ghostly, Chamberlain, mucilage, guilty, brogue, big game, dig gems, dog gone, fig, rig, Windsor, single, singing, strong, stronger, strangest, long, longer, longest, young, younger, youngest, mingle, singer, linger, gizzard, gale, get, Gatling, garden, Gordon, ghosts, good, goose, gudgeon, girder, eagerly, rigorously, Genghis Khan, agricultural, argument, augmented, bogey, sugar, rural, rugby, Berger, intrigue, brig, The Hague, egg, jog, log, jugular, chug, Pittsburgh, goiter, gouge, guide, bragging, jagged, flag-getter, waggle, rag and rig, brag last.

[f]

fine—[faɪn]

The sound *f* is a voiceless, labiodental fricative. It is made by (1) simultaneously blocking the nasal passages with the soft palate and resting the upper teeth lightly upon the lower lip, and (2) forcing an unvocalized breath stream through the narrow openings, between the teeth and lip.

Spelling of [f] words: *f* as in *fire*; *ff* as in *affable*; *ph* as in *phase*; *gh* as in *laughed.*

It is practically impossible to make an error in the pronunciation of [f], but it is not at all impossible for the ear to mistake [f] for [θ] or [ʃ]. Children very often substitute [f] for [s] when they are learning to talk. Sometimes this mistake is made because they confuse the lower frequencies of [s] with [f] and possibly overlook the higher frequencies of [s] altogether. In that form of hearing defect called high-frequency deafness, the patient may not hear the high, shrill components of [s] at all, and so understand the sound to be practically identical with [f].

Transcribe: half, fine, leaf, face, raft, swift, quaffed, rift, bereft, laughed, craft, sift, muffed, pelf, Milford, Gifford, malformation, elfin, safe from, brief for, half fare, feature, fixture, fake case, fender, factual, fan gnats, farther, father, foxglove, folk carols, Fuller's, foolishness, fudge, Ferguson, reefer, lifter, laughter, rafter, calf rope, half full, offing, coughing, loafed, aloof, fancy, roughing, surfboat, beef, skiff, Ralph (Br.), chef, chaff, whooping-cough, oaf, roof, duff, turf, laugh faster, calf fat, chaffer, coif, rife.

[v]

vat—[væt]

The sound [v] is a voiced, labiodental fricative. It is made practically like [f], except that the stream of air is vocalized.

Spelling of [v] words: *v* as in *vat*; *f* as in *of*; *ph* as in *Stephen.*

Transcribe: brave, van, fervor, live, leaves, clove, mosquito, camellia, view, halve, vane, value, university, Louisiana, Los

Angeles, Nevada, salve, believe, Nan, give no more, heave noose, wives, behooves, loves, grieve, very.

The [v] phoneme, like the [f] phoneme, has no variant forms in English. It has a bilabial counterpart in dialectal German, however, called the bilabial fricative. Its symbol is [β]. When this sound is used in English for [v], the hearer gets the impression that a [w] has been used, so that *very* sounds like [wɛrɪ]. Speakers of all German dialects, including Yiddish, will tend to unvoice [v], so that *have* will be pronounced with [f], as [hæf].

Mexicans and other Spanish-speaking people undertaking to speak English have particular difficulty with [v]. When the letter occurs initially in the Spanish sentence, or is preceded by an orthographic *n*, it is pronounced like the English [b]. In all other positions the Spanish [v] is pronounced as the bilabial fricative. Spaniards will thus say [bɛrɪ] for *very*, [ɪmbaɪt] for invite, and will seem to the English-speaking hearer to insert [w] (actually the bilabial fricative [β]) in *fever*. They are likely to carry these pronunciations into English until they are taught to make and use the English [v] uniformly in all contexts.

The constant relation which [v] bears to [f] is exemplified in the replacement of [f] by [v] in pluralizing nouns ending in the [f] sound, as *knife, knives*; *wife, wives*. It is, of course, almost inevitable that [f] becomes voiced when placed between two vocalic sounds.

Transcribe: Vimy Ridge, victuals, Vachel Lindsay, vector analysis, Vatican policies, Varner, Vaughn, vaudeville, vociferous verdure, virginal, vermiform appendix, eventide, Ivry, Avery Island, everyone, avocation, chauvinism movement, nervously, reeve, brave, groove, swerve, nerve vein, navvy, groove valve, have, salve, calve, shave, knave, move, love, above, cove, dove.

[s]

sing—[sɪŋ]

The sound [s] is a dental (as to the lower teeth) and alveolar fricative. It is made by simultaneously blocking

the nasal passages with the velum and bringing the tongue into airtight contact with the inner surfaces of the teeth all the way around except where either the tip of the tongue or the blade of the tongue is elevated in front. A stream of unvocalized, slightly compressed air is forced over the tongue against the gum ridge. The air, being deflected downward, is split by the lower teeth into two eddies, one outside and one inside the teeth.

Spelling of [s] words: *c* as in *cents*; *s* as in *see*; *sc* as in *scents*; *ss* as in *access*; *z* as in *waltz*.

Obviously, [s] is an easy sound to produce. But it will prove difficult to young children when they lose their front teeth. Persons with undershot lower jaws will have difficulty with the sound, but they are usually able to make adjustments by varying the tongue position. Some speakers in New York City and elsewhere overenergize [s], making it too prominent. Some erroneously substitute it for [z] final, so that rose [rouz] becomes [rous]. Some, on the other hand, substitute [z] for [s] final in a word or syllable, especially if the next word or syllable begins with a voiced element; for example, [gæz] for *gas* [gæs], [beɪzbɔl] for *baseball* [beɪsbɔl].

In Spanish the tongue is drawn further back than in English, so that an [s] less sharp than the English [s], and slightly resembling [ʃ], is produced.

Transcribe: deaths, muffs, Alaska, skin, bask, spade, sparrow, smack, swat, spread, Thisbe, slam, since she, quince, scents some, tent show, determination, negotiations, hostilities, reverberates, amusing, icebox, iceman, last night, must be, this book, this sign, nice baby, first thing, fifth throw, fifth girl, secede, sycamore, sagebrush, Setebos, self, selves, saddlebags, sardines, Solomon, saw log, soapbox, superstition, submarine, surpluses, Aesop, hyssop, ace-high, esoteric, asparagus, periosteum, Austerlitz, boastful, trustworthy, rooster, brutish, bursting, thirsty, oyster, Christ, ouster, police, remiss, place, recess, grass, floss, use, moose, fuss, worse, Royce, foist, roustabout, rice, this Saturday, Mississippi, Miss Samuels.

Transcribe: connected discourse as assigned by teacher.

[z]

The sound [z] is produced practically as [s] is produced, except that the air stream is vocalized.

Spelling of [z] words: *s* as in *was*; *ss* as in *scissors*; *z* as in *ablaze*; *zz* as in *buzz*.

The sound [z] may be defective in the same manner as [s]. Through the influence of German and some other foreign languages, final [z] is often unvoiced to [s], as when *boys* [bɔɪz] becomes [bɔɪs]. This is especially common in New York City.

Transcribe: freeze, busy, rags, puzzle, Lisbon, his, hazel, trains, maneuvers, incidents, loyalists, infantry, dictatorship, mandate, youths, paths, cobs, cribs, was Zelma, is Zulu, his zebra, critical aviators, enacted, Manchurian, halls, easy, Isidore, Azores, Azariah, Oz, Osmond, ozone, ooze, Uz, zeal, Zingari, zaney, zestful, Zachariah, zodiac, zoo, breeze, fizz, blaze, jazz, ah's, jaws, rose, beds, dews, days, dues, ruse, cruise, buzz, furs, whizzing, his sins, his zeal, dizzy, because, rows, prize, gives.

Transcribe: a paragraph of connected speech.

[w], [ʍ]

well—[wɛl]

when—[ʍɛn]

The sound [w] is a voiced, bilabial glide. It is sometimes called a semi-vowel. To produce [w], round the lips so as to leave only a small opening; raise the tongue at the back to the position for [u]; and force a vocalized breath stream through the lip opening, immediately changing it to conform to that necessary for the vowel which follows.

Spelling of [w] words: *w* as in *was*; *wh* as in *when* (by some eastern and British speakers); *ou* as in *Ouachita*; *u* as in *quick*.

[ẇ] has a voiceless counterpart. There are two common symbols for it, [ʍ] and [hw]; usually the former is employed.

The [ʍ] sound is made in the same way as [w], except that the vocal bands do not vibrate Though the sound begins voicelessly, it usually achieves a slight vocal quality near the end. It is probable that [ʍ] is produced by a more vigorous breath than the voiced [w].

Spelling of [ʍ] words: *wh* as in *white, when, where.*

In eastern New England and in some parts of England, the [ʍ] is not used. There *white, when, where* are pronounced [ʍaɪt], [ʍɛn], and [ʍɛə]. Some authorities regard these pronunciations as errors, even in areas where large numbers use them.

The [w] sound occurs in English, French, Italian, and Spanish, but not regularly in other commonly used languages. Speakers of German origin are almost sure to substitute [v], or the bilabial fricative [β], for [w]. The best way to teach [w] to a speaker who does not have it in his vocabulary is to let him substitute the sound [u] for [w]. By progressively quickening the sound, he will presently approximate the English [w]. Since [w] and [v] are frequently confused by foreigners, and since both are likely to be displaced by the bilabial fricative, a so-called phoneme-splitting drill on confusing pairs of words is valuable. Examples: *vine* and *wine, veal* and *weal, vain* and *wain,* and the like.

Transcribe: what, where, while, white, whim, annulment, Caledonia, intervention, whine, whip, whisk, whisper, whiz, whirled, bobwhite, horsewhip, meanwhile, scheduled, demanded, munitions, whimper, weep, willow, Wales, welkin, wall, wold, wool, Worcester, worst, peewee, DeWitt, away, oh well, ah well, bluing, Berwick (Am.), wow, widen, how well; when, wen; Whig, wig; where, were; which, witch; whither, wither; wheel, weal; whoa, woe; what, Watt; whether, weather; whacker, Wacker; wheat, why, whistle, whim.

Transcribe: standard and substandard pronunciations overheard by the student.

[l]

law—[lɔ]

The sound [l] is a voiced, unilateral or bilateral, tongue-point, alveolar continuant. It is produced by pressing the tongue tip lightly against the upper gum ridge and allowing the vocalized breath stream to pass at one or both sides of the tongue.

Spelling of [l] words: *l* as in *later*; *ll* as in *all*.

The [l] phoneme contains numerous variants, of which English contains clear [l] and dark [l]. Clear [l] is made with the tongue tip far front on the hard palate, even against the upper front teeth. This [l] is common in the Romance languages, in British English preceding vowels, especially front vowels, and in eastern southern American English preceding front vowels. Dark [l] is pronounced with the tongue tip approximately half an inch back of the upper teeth. A suggestion of the different resonant qualities of clear [l] and dark [l] may be gained by pronouncing *eel, all,* successively. In close transcription, the symbol for dark [l] is [ɬ]. In some dialects of English, notably the Cockney dialect, [l] is sometimes so dark and spoken with so lax a tongue that it is indistinguishable from the vowel [o]. *Milk* may thus become [mɪok]. In less extreme instances, [ɔ] or [ʊ] may be used here, producing [mɪɔk] or [mɪʊk].

In the general American area, in New York City, and in scattered areas elsewhere, the dark [l] used affects previous vowels, especially [ɪ], so that *silky* may sound like *sulky,* and so on. Sometimes, in these areas, the dark [l] is so prominent that it amounts to a second syllable in what should be a monosyllable, as in *fool, school,* and the like, which become [fuəl] or [fʊəl], [skuəl] or [skʊəl].

In the South, [l] is often erroneously omitted from *self* and all its compounds, from *twelve, help, elm, film,* and a few other words, producing [sɛf, hɛp, fɪm]. In *William,* [l] is often changed to [j], producing [wɪjəm].

Transcribe: will, wilt, clean, lilt, lottery, link, life, lady, false, guilt, wall, soiled, mailed, yield, shield, told, bolt, quilts, hilts, resolve, calm, riddle, salmon, almonds, helpful, pulpit, yelp, wealth, stealth, dissolve, whelp, help, alpine, cuddle, milk, sulk, colts, pulse, sail low, Alfred, revolver, cattle, solve, all legs, pulverize, self, twelve, shelf, William, wail loud, souffle, canteloupe, liter, lily, latest, Lent, letter, latter, land, bland, blond, lard, lord, lock, Launfal, lotion, luxury, learn, feller, miller, mailed fist, marshmallows, Molly, Marlin, mauling, oleomargarine, pullet, drooling, dullish, girlishly, meal, kill, jail, shell, amalgamate, doll, call, cajole, full, fool, gull, curl, coil, spoil, oil, soil, file, foul, fowl, flower, flour, glower, glide, all leather, call later, follow, bell lower, bellower.

[m], [n], and [ŋ]

May [meɪ], *no* [noʊ], and *sing* [sɪŋ]

The sounds [m], [n], and [ŋ] are the three English nasal continuants. Though commonly called consonants, they are so sonorous that they are really more nearly vowels than consonants. To produce any of these sounds, the oral cavity must be closed with a valve to prevent the escape of air through the mouth. In the case of [m], the lips are closed; of [n], the tongue is against the alveolar space and the inside of the upper teeth; of [ŋ], the back of the tongue is against the soft palate to block the oral cavity. A vocalized breath stream is allowed to pass freely through the nasal passages. The sounds [m], [n], and [ŋ] are continuants; that is, they may be held as long as the breath supply lasts.

Spelling of [m], [n], and [ŋ] words: *m, mm,* as in *hum, humming; n, nn,* as in *thin, thinner; n, ng,* as in *bank, banging.*

The velar nasal continuant [ŋ], together with the errors which beset it, has already been discussed.

Transcribe: may, beam, motion, van, lean, temple, sun, then, song, fungus, dumb man, angle, jangle, bungle, one name.

Transcribe: a list of interestingly pronounced words that the student has overheard.

[m]

The bilabial, nasal continuant is so simple that errors in pronouncing it are uncommon and nearly impossible. It is a very domineering sound, however, and is the cause of many errors in the pronunciation of preceding and following vowels. [ɛ], [æ], and [aʊ] are particularly likely to suffer mispronunciation when adjacent to an [m]. The mispronunciations for which [m] is responsible are nasalizations. The velum, anticipating the necessity of lowering to open the nasal passages for the pronunciation of [m], drops too soon, so that the preceding vowel becomes nasalized. These nasal vowels, common enough in French, Portuguese, and some other languages, and not at all offensive in these languages, are regarded as extremely offensive in English. Speakers should, therefore, guard against lowering the soft palate in anticipation of the approaching pronunciation of [m].

Sometimes [m] displaces [n] by assimilation, as in the phrase *up and down* [ʌp m̩ daʊn], rapidly spoken. (See discussion of [n] following.)

Transcribe: meaty, mincemeat, majored, mandate, Marne, monastic, mule, emitted, flimsy, flames, grammar, rumor, stumble, number, blame, amnesty, alarm, warm, quarter, airdrome, dumb, crumb, some made mistakes, summer maid, mouse, game man, hammer, mound, moiling, mighty, mile, Midas.

[n]

The alveolar, nasal continuant [n] is very much like [m], since the resonating cavities of the two are almost identical in size, shape, and orifice. The resonating cavity for [n], however, is shortened by the distance from the lips to the gum ridge and somewhat flattened by the raising of the tongue, so that [n] has, resultantly, a timbre slightly different from that of [m], though not easily distinguishable from it. For example, in the rapid pronunciation of *cap and bells* where the "and" is very much abbreviated by unstressing, it is very difficult to determine whether a speaker says

[kæp n̩ bɛlz] or [kæp m̩ bɛlz], especially if he permits his lips to remain closed during the pronunciation of the [n].

The sound [n] produces nasalization of adjacent vowels, such as [ɛ], [æ], and [au], in the same way that [m] does.

The [n] phoneme contains many variants produced by changing the point of lingual occlusion. The Romance languages, for instance, incline toward a dental [n], made with the tip of the tongue against the upper teeth. Foreigners learning English will need to abandon their dental [n]'s and to use only the alveolar [n], made with the tongue touching the gum ridge just back of the upper teeth. With the [n] so placed, mistakes in pronouncing it will seldom be heard.

In Spanish, *n* before *v* becomes [m], as in *invitar* [imbitar]. Consequently, Mexican and other Spanish-speaking students have to guard against saying [imbait] for *invite*, and so forth.

Transcribe: neatest, knitted, nails, nets, gnats, knapsack, gnarled, gnostic, gnome, nook, noodle, nut, nerve, weanling, windward, wainwright, wended, winded, fanned, bonny, bawn, bone, graft, boon, bunny, burning, fern dish, turntable, earnings, spleen, thin, rain, men, man, barn, born, flown, rune, tune, June, fun, yearn, joint, jounce, spine, turn needles, thinning, thin knees, bean knife.

Transcribe: connected speech as overheard by student.

Syllabic [m̩], [n̩], [l̩]

In certain homorganic combinations, individual speakers pronounce [m], [n], and [l] as though they were separate syllables. This syllabication is represented phonetically by a stroke under the letter, thus: [m̩], [n̩], and [l̩]. These syllables, if preceded by a strongly plosive consonant, rather than the customary weak American medial plosive, may be transcribed as [əm], [ən], and [əl].

Transcribe: trap 'em, button, bottle, cotton, addle, rotten, rattle, kitten, paddle, sadden, bidden, battle.

[h]

home—[hoʊm]

The sound [h] is a voiceless, glottal fricative. To produce [h], block the nasal passage with the soft palate and open the mouth to allow free passage of air. Force the breath through the narrowed glottal chink so as to produce audible friction.

Spelling of [h] words: *h* as in *home*; *wh* as in *who*.
Transcribe: ham, hollow, hope, hitch, toe hold, behind, Mohawk, halfhearted, harmony, hateful, hiding, higher, humor, happiness, hunting, aha.

The *h* in *human* may be produced in three ways: (1) [h] spoken laxly; (2) [hj] spoken more tensely; and (3) [ç] spoken tensely. ([ç] is called the "ichlaut" from its use in German.)

[h] is properly omitted from some words, such as *honor* and its derivatives; but it should not be omitted from *huge*, *human*, and so on.

Transcribe: heedless, hysteria, heinous, hen, handicraft, hockey, hardihood, hawk, hall, whole, hooked, who, whoop, huddle, herd, ahead, oho, uh-huh, hoyden, houses, hydrostatics.

[ju]

use– [jus]

The sound [u], when spelled with orthographic *u*, *eu*, or *ew* (but not with *o* or *oo*), is accompanied by [j] in many words; and in other words it is so pronounced by many speakers. Only general rules for the [ju] pronunciation can be made. It is understood that exceptions will arise. (See discussion of [u], page 66.)

The sound [u] (or [ʊ] in unstressed syllables), when it is spelled *u*, *eu*, or *ew* (but not *o* or *oo*), is accompanied by [j]:

1. After [h], [f], [g], [k], [b], [p], [m], [v], and [ʍ] in all English speech. Examples: *hue* [hju], *few* [fju], *feud* [fjud],

view [vju], *imbue* [ɪmbju], *pew* [pju], *cube* [kjub], *music* [mjuzɪk], *cute* [kjut], *regulate* [rɛgjʊleɪt], *whew* [ʍju].

2. After [t], [d], and [n] in the speech of some general American and eastern speakers, and in the speech of nearly all southern and British speakers. (Others use [u].) Examples: *tune* [tjun], *dew* [dju], *new* [nju].

3. After [s], [z], [θ], and [l] in some eastern and in most British speech. (Others use [u].) Examples: *suit* [sjut], *presume* [prɪzjum], *enthusiasm* [ɪnθjuzɪæzəm], *lute* [ljut], *absolute* [æbsoljut].

Transcribe: stupor, stupid, tuber, Tuesday, Tubal, tuning fork, tune, tuna, tumult, tumor, pursuit, duty, duly, duplex, duplicate, dual, dune, review, museum, mule, dusky, doom, cute, during, dutiful, Dutch, fume, fudge, fumigate, fun, fewest, knew, fuse, fury, musical, huge, humidity, nucleus, nude, views, muse, mew, bugle, Buick, Beulah, pewter, chew, pubic, public, publish, bus, punish, pure, Puritan, pupil, purify, purple, push shoe, neutrality, news sheet, studious, constitutional, enthusiastic, pursue, resume, absolutely, lutist, dew-drop, choose, tool.

Transcribe: connected speech as overheard by student.

Additional Uses of [ə]

It has been noted that *schwa* [ə] has been used in unstressed positions for several different orthographic vowels. As a matter of fact, it is used for every one of the so-called unstressed orthographic vowels, *a*, *e*, *i*, *o*, *u*, and *y*, as well as for many combinations of these orthographic symbols; and in southern, eastern, and British speech (but not in general American), for any one of those vowels combined with *r*. The following are some spellings of [ə], with initials indicating dialects where found.

1. *a* as in *abash* (S., E., G.A., Br.)
2. *aa* as in *Cannaan* (S., E., G.A., Br.)
3. *ae* as in *Michael* (S., E., G.A., Br.)
4. *ar* as in *altar* (S., E., Br.)
5. *au* as in *authority* (S., E., G.A., Br.)
6. *e* as in *tangent* (S., E., G.A., Br.)
7. *ea* as in *sergeant* (S., E., G.A., Br.)

8. *eo* as in *pigeon* (S., E., G.A., Br.)
9. *er* as in *butter* (S., E., Br.)
10. *i* as in *accessibility* (S., G.A. — [ɪ] in E., Br.)
11. *ie* as in *conscience* (S., E., G.A., Br.)
12. *io* as in *religion* (S., E., G.A., Br.)
13. *ir* as in *tapir* (S., E., Br.)
14. *o* as in *blossom* (S., E., G.A., Br.)
15. *oi* as in *Antoinette* (S., E., G.A., Br.)
16. *on* as in *monsieur* (S., E., G.A., Br.)
17. *or* as in *labor* (S., E., Br.)
18. *re* as in *theatre* (S., E., Br.)
19. *u* as in *radium* (S., E., G.A., Br.)
20. *ur* as in *murmur* (S., E., Br.)
21. *y* as in *paralysis* (S., G.A. · - [ɪ] in E., Br.)
22. *yr* as in *satyr* (S., E., Br.)
23. ' as in *Oz's* (S., E., G.A., Br.)

Transcribe: Several paragraphs of rapid conversation as spoken by the student himself or by a classmate in this study.

Special problems of stress

Reference has been frequently made in this chapter to stressing. Stress is an unstable factor in the English language, not merely because increased rapidity of speech progressively weakens the vowels of unstressed words and syllables, but because opinions continually change regarding the placement of stress within a word. During the current years, there has been a strong tendency among the rank and file of speakers in America to retract the stress of certain two-syllable words, and place it on the first syllable, rather than on the second. Some of these words are as follows:

research	*defect*	*recess*
cement (n.)	*address* (n.)	*adult*
Detroit	*esquire*	*escape* (n.)

Teachers, schools, and all other educational forces habitually strive to maintain the *status quo* in all matters of language change, referring to precedent as indisputable authority. In this case, precedent decrees the placing of the accent on the second syllable. But the pressure of the

masses throughout the country is heavy, and conservative forces sometimes have to yield. Recent dictionaries record a yielding on some of these words, permitting the stress on the first syllable, at least as a second choice, in *research, address, adult,* and occasionally others. Even so, it appears academically safer at this date to observe the traditional placing of the accent on the second syllable.

In the South, the placing of the stress on the first syllable of dissyllabic words, not commonly so pronounced, is to be avoided. The list here includes a large number of words, of which the following are most familiar: *police, Monroe, event,* and *pecan.* Occasionally three-syllable words fall into this class, as when *insurance* is stressed on the first syllable instead of the second.

Special problems of nasalisation

Another peculiar phenomenon occurs in New York City and, to some extent, elsewhere, in the form of the development of a system of nasal vowels, comparable to those in French and Portuguese. Where syllables contain vowels plus a nasal, particularly [n], the nasal disappears and the vowel becomes nasalized in compensation. Thus, *confess* becomes [kə̃fɛs], *ancient* becomes [ẽɪʂənt], and so on. The following group of words is suggested for transcription and for pronunciation drill to correct this error.

confuse	science	incident
ancient	conference	one should
enthusiasm	Einstein	and she
mention	since	answer
instead	and which	fence
engage	inconsistent	pronounce
contact	tendency	convince
confusion	inflection	when she
anvil	infant	consent

The student who has open-mindedly used this chapter will now find himself sensitized to speech and its phenomena, so that he (a) hears speech with a new attentiveness, and (b)

makes judgments among dialects, and evaluations regarding standards with a new intelligence. He is more critical than before, yet at the same time more tolerant, for his criticism is tempered with understanding. Since he comprehends speech phenomena, he can use speech as an increasingly effective instrument of social control.

CHAPTER 6

The Mechanism of Human Speech

The act of producing speech sounds is an extremely complex activity, involving simultaneous and delicately coordinated actions of many organs of the body, none of which is concerned solely with speaking. For the purpose of describing these actions and the parts of the body which participate in them, we shall find it convenient to deal with them under four headings: (1) breathing, (2) phonation, (3) resonance, and (4) articulation. In describing these actions separately, we must not lose sight of the important fact that in speaking they are not separate acts, but a coordinated whole. The organs and systems which we use in speaking may act separately and, to some extent, independently of each other in the vital functions of breathing and eating, but these actions are greatly modified in the speaking process. During speech, breathing is not independent of phonation; phonation is not independent of the effects of the resonators; and resonance and articulation are not independent of breathing and phonation.

The human speech mechanism is a wind instrument. The *breathing* apparatus furnishes the original power for all of the sounds of our language by means of the expulsion of air from the lungs. In *phonation* (the production of vocal sounds) the vocal folds in the larynx are set into vibration by the stream of expelled air. The masses of air in the cavities of the throat, mouth, and nose are set into vibration as a result of the vibration of the vocal folds. The vibratory action of the air enclosed in these spaces is called *resonance.* The valvelike action of the lips, teeth, tongue, and other structures in interrupting and modifying the vocal sounds is called *articulation.* The articulators may also interrupt and

restrict the flow of expelled air in such a way as to produce the turbulence which makes the voiceless sounds of speech.

We will discuss these four processes, together with the structures of the body which take part in them, in the order in which we have named them.

Breathing

The use of the breath for speaking is an adaptation of the vital process of respiration, which involves the exchange of carbon dioxide for oxygen in the lungs as air is inhaled and exhaled. In discussing breathing as a means of producing speech sounds, we can regard the breathing mechanism simply as a bellows, the lungs serving merely as an air-reservoir which can be alternately inflated and compressed by the action of the muscles of inhalation and exhalation. The function of the breathing apparatus in speaking is simply to furnish an adequate supply of air, under suitably varying pressure, for the operation of the sound-producing mechanisms, without interfering with the vital respiratory process.

The reservoir of the speech-bellows is not a chamber, but a sponge, or rather two sponges. The lungs are two masses of spongy, porous, elastic tissue, lying side by side and, together with the heart, filling the thoracic cavity. The smallest air-containing divisions of the lungs are tiny sacs called *alveoli*. A cluster of several alveoli receives air through a duct which may be less than a hundredth of an inch across. Several of these small ducts join to form a larger passage; the larger channels join still larger ones; and so on until all of the branches of each lung converge into a single tube called a *bronchus*. The bronchus from the left lung joins the bronchus from the right lung to form the windpipe, or *trachea*, which opens through the larynx into the pharynx. The whole branching structure is sometimes termed the *tracheobronchial tree*.

The capacity of the lungs varies with the age, sex, and stature of the individual, and the amount of air inhaled and

exhaled in a single respiratory cycle differs according to the immediate needs of the individual. In quiet, passive breathing, when the body is resting, the amount of air which passes in and out, called *tidal air,* is little more than a pint. After inhaling this amount of tidal air, it is possible to inhale a great deal more. This additional inhalation, called *complemental air,* amounts to about 1600 cubic centimeters (almost three and a half pints). In exhaling, after expelling the complemental air and the tidal air, it is possible to expel an additional 1600 cc., called *supplemental air.* Thus, a maximal exhalation after the deepest possible inhalation, called the *vital capacity,* consists of complemental, tidal, and supplemental air—a total of 3700 cc. (about a gallon) of air. About 1000 cc. of *residual air* remains in the lungs even after the greatest expiratory effort. These figures are averages for the adult male. The average figures for women are about 800–1000 cc. lower.

There is no significant correlation between vital capacity and excellence in voice, although singers in general are said to have slightly greater than average lung capacity. Control of the breathing seems to be a far more important factor than capacity. By control of the breathing is meant the ability to provide an adequate supply of air (adequate in both pressure and volume) to the larynx and to the articulators under all of the varying conditions which exist in speaking, and the ability to replenish the supply quickly and frequently so that the reserve is always ample. Such control is achieved by coordination of the muscles of inhalation and exhalation, now to be described, and by efficient coordination of the larynx—the mechanism of phonation.

The lungs, you will remember, fill the thoracic cavity. Their tissue is not contractile like the tissues of muscles, but only elastic. The volume of the lungs, and consequently the amount of air contained in them, is controlled by the size of the thoracic cavity. When the dimensions of the cavity are increased, the lungs are inflated with air which is sucked in through the nose or mouth, or both, and down through

the pharynx, larynx, trachea, and bronchi. When the dimensions of the thoracic cavity are decreased, the air is squeezed out of the lungs through the same channels. The lungs themselves are entirely passive in the process.

The flexible walls of the thorax can be moved in order to increase or decrease the size of the thoracic cavity. They are formed over a bony framework, roughly conical in shape, which consists of the twelve pairs of *ribs*, and the *sternum* (breastbone) and *vertebral column* (backbone) with which the ribs are articulated. The pairs of ribs are numbered from the top downward for identification, and they resemble hoops which slope downward on either side of the backbone. The upper ribs slope less than the lower ones; the amount of sloping increases down to the ninth rib and gradually decreases below the ninth. The ribs increase in length from the first to the seventh and then diminish to the twelfth. The first seven ribs are connected by means of cartilages to the sternum; the next three are connected by similar cartilages, each to the rib above it; and the last two are not connected to the others. The shape of the ribs is important, for an upward pull on the ribs will move them outward as well as upward, thus increasing the side-to-side dimension of the chest, and it will also move the sternum upward and forward, increasing the front-to-back dimension.

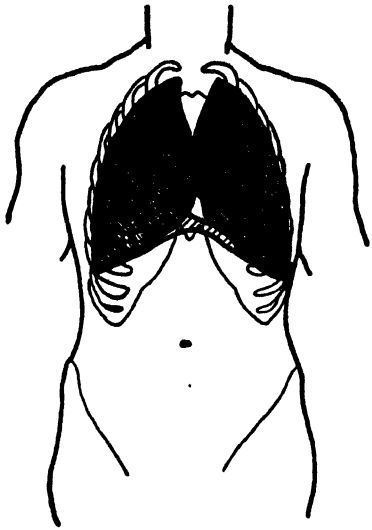

FIG. 2. THE LOCATION OF THE LUNGS. Notice that the thoracic cavity (above the diaphragm) does not extend as far as the lower ribs.

To name and describe all of the muscles which may be used in expanding and contracting the lungs is beyond the scope

of this chapter. In the first place, their number[1] would be confusing to the beginning student, and, in the second place, their actions and interactions are so complex that authorities are not agreed on all of the details. It will be useful, however, to state some of the fundamental facts and principles of muscular action and to name and locate a number of the principal muscles which are used in breathing, so that the general picture will be clear.

A muscle does its work by contracting. When a muscle contracts, it becomes shorter and thicker and exerts a pull on the structures to which it is attached. The movement which results from the pull depends upon which attachment is the more fixed. The degree of fixation often depends upon the contraction of other muscles acting in antagonism to the first. In a typical movement of a part of the body, several antagonistic but coordinated groups of muscles may come into play. One muscle or group of muscles is the primary moving force; an opposing group inhibits the movement, helping to control its speed and extent; and a third group fixes structures which are not to be moved. Under some circumstances the force of gravity (the weight of bodily structures, in other words) serves as the force opposing the pull of muscles.

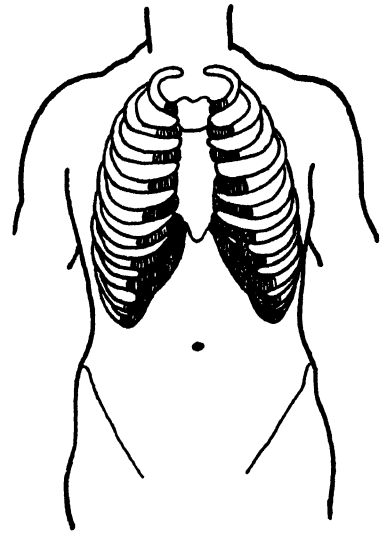

FIG. 3. THE RIBS, VIEWED FROM THE FRONT. Note the shape and the slope.

[1] Judson and Weaver, in their *Basic Speech and Voice Science* (College Typing Co., Madison, Wis., 1933), describe thirty single muscles, pairs, and groups of muscles, amounting to more than a hundred in all, in their discussion of inspiration and expiration.

The muscles which pull upward on the ribs and sternum work against gravity, against the elasticity of certain tissues, and against antagonistic muscles which hold the trunk erect. The principal muscles in this group are those which extend downward from the *clavicles* (collarbones), *scapulae* (shoulderblades), and *vertebrae*, over the front, sides, and back of the thoracic cage. The clavicles, scapulae, and vertebrae are relatively fixed structures; so the muscular pull moves the ribs and sternum upward and, because of the slope of the

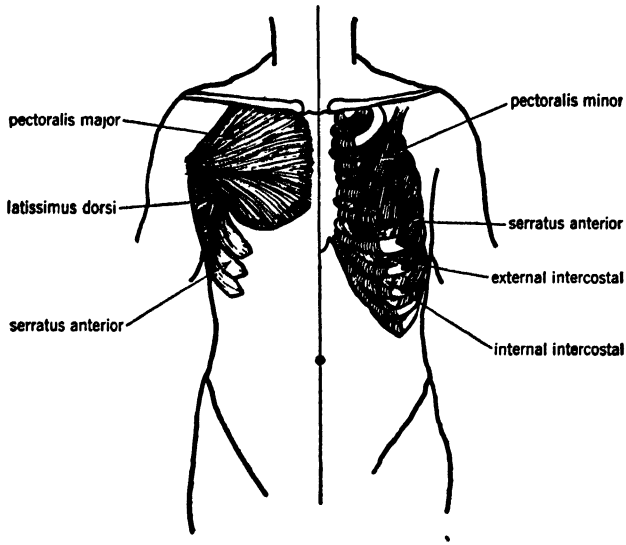

FIG. 4. SOME OF THE MUSCLES WHICH PULL THE RIBS AND STERNUM UPWARD.

ribs, outward, thus increasing the side-to-side and front-to-back dimensions of the thorax. In breathing during violent exercise, when the demand for oxygen is greatly increased, the head and spinal column remain fixed while the clavicles and scapulae rise and fall with the ribs and sternum. The additional depth of inhalation achieved in this way is of no value in speaking, and the additional effort is definitely disadvantageous, because it is detrimental to the control of exhalation. The weight of the shoulders and arms adds to

the difficulty of keeping the exhalation steady and smooth, and the additional tension in the muscles of the neck and upper thorax interferes with the free action of the muscles involved in phonation.

The floor of the thoracic cavity is the *diaphragm,* a double-dome-shaped sheet of muscle and tendon which completely separates the thoracic and abdominal cavities, except where it is pierced by the esophagus and the blood vessels and nerves which supply the organs below it. The central portion of the diaphragm is made up of connective tissue and is called the *central tendon.* The peripheral part is made up of muscular fibers which extend from the lower six or seven ribs and their cartilages, from the lower end of the sternum, and from the vertebrae of the lumbar region, to the central tendon. Contraction of these muscle fibers exerts an upward pull on the ribs, sternum, and lumbar vertebrae, and a downward pull on the central tendon. The result is a lowering of the domes and a consequent increase in the vertical dimension of the thoracic cavity. The amount of upward motion of the lower ribs, resulting from the pull of the diaphragm, depends on their fixation by other muscles.

The position of the diaphragm depends on three factors: (1) its state of contraction, (2) the tendency of the elastic tissue of the lungs to assume a neutral state between inflation and deflation, and (3) the upward pressure of the abdominal viscera (liver, stomach, intestines, etc.) upon its lower surface. The last factor varies with the amount of distention of the stomach and the posture of the body.

So far, we have accounted for only one half of the breathing cycle. We have seen that the lungs are filled with air because they increase in volume as the cavity in which they lie is increased in size. Increase in the size of the thoracic cavity is achieved by the contraction of the diaphragm, pulling the floor of the roughly conical cavity down, and by the contraction of a number of thoracic muscles which pulls the ribs and sternum upward and outward.

In quiet, passive breathing for vegetative purposes, ex-

halation occurs without the expenditure of much effort. The diaphragm relaxes and ceases to push downward against the abdominal viscera. The muscles which raised the walls of the bony cage now relax, and the ribs and sternum settle by their own weight back into their unraised position. The elastic tissues of the lungs tend to resume their state of equilibrium. The result of all this relaxation and recoil is to squeeze some of the air out of the lungs.

But, for the maintenance of the air pressure which is needed for making speech sounds, more forceful exhalation

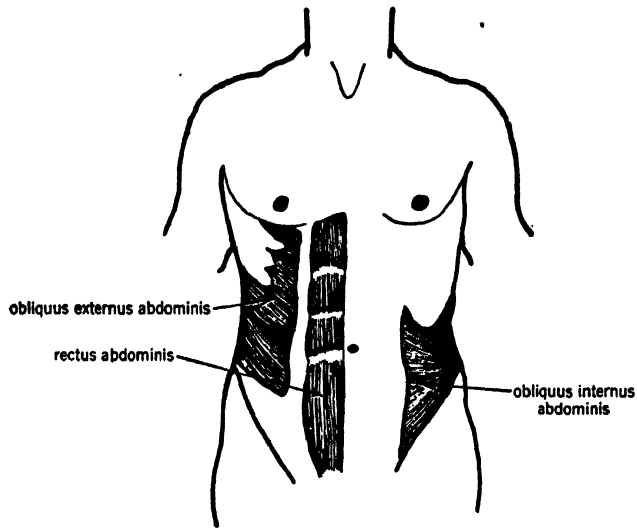

FIG. 5. SOME OF THE MUSCLES OF EXHALATION.

is necessary. The action of a muscle is always a pull. The same muscles which pulled the ribs up and the central tendon of the diaphragm down cannot also push the ribs down and the diaphragm up. These actions are performed by a group of muscles which are antagonistic to the muscles of inhalation.

The muscles of exhalation are a small group, made up principally of the muscles of the abdominal walls. The walls of the abdominal cavity contain four flat sheets of muscle on

each side of the midline. One of them, called *rectus abdominis,* runs vertically up the front of the abdomen from the pelvis to the sternum and the cartilages of the fifth, sixth, and seventh ribs. Its contraction pulls downward on these ribs, or, if they are held up by the action of opposing muscles, the contraction of rectus abdominis tends to reduce the convexity of the abdominal wall. thus exerting pressure on the contents of the abdomen. Two other sheets, known as the internal and external oblique muscles of the abdomen (*obliquus internus abdominis* and *obliquus externus abdominis*) run criss-cross from certain pelvic bones to the six or eight lowest ribs; and the fourth sheet, called *transversus abdominis,* extends across the abdomen. The contraction of these muscles compresses the contents of the abdomen, producing pressure against the lower surface of the diaphragm and forcing it up so as to make the thoracic cavity smaller. You have probably noticed the vigorous action of these abdominal muscles in hearty laughter or in coughing. They produce forceful exhalations by pulling downward on the lower ribs and by pressing the abdominal viscera against the lower surface of the diaphragm.

These abdominal muscles, like the numerous muscles of the chest and back which may take part in breathing, also function in controlling the posture of the body. Without going into detail, it may be said that the position of the head and neck, the shoulders, the trunk, and even of the arms and legs, can modify the functioning of some of the muscles of breathing. In any speaking situation in which you need the full use of your vocal apparatus, you will find, as others have found, that the best posture is the posture which interferes least with breathing. An easy, erect position, with the chest comfortably filled, and with no twisting or sagging or stooping of the trunk, permits effortless, responsive breathing without strain or fatigue.

It has sometimes been assumed that there is only one "correct" way to breathe for speaking or singing. Such an assumption seems to disregard the normal variations in the

size and shape of the bodies of human beings. It is possible to measure differences, due to physique or habit, in the amount of bodily expansion that occurs on inhalation. Measurements may be made at the level of the armpits ("thoracic" breathing), at the level just below the end of the sternum ("medial" breathing), and at the level of the umbilicus ("abdominal" breathing). From the amount of expansion in a given region, inferences are sometimes proposed concerning the actions of the diaphragm and the other muscles of inhalation. There has been controversy among teachers over the relative superiority of these types of regional predominance in breathing, but recent measurements of a large group of university students failed to substantiate the superiority of any type.[2] Teachers are agreed that "clavicular" breathing, in which the shoulders are heaved up in inhalation, is detrimental to speaking and singing.

The factor which most often interferes with adequate breathing among beginning public speakers is not mechanical, but emotional. Breathing is so directly related to bodily states that it is one of the most sensitive indicators of emotion. Measurements of the rate and depth of breathing are used in the psychology laboratory (in the so-called lie detector, for example) for just this reason. It should not be surprising, then, that an inexperienced speaker who is attempting to make an impression of friendly goodwill and sincerity may find that his breathing is involuntarily forcing his speech into a pattern which expresses his real agitation and embarrassment.

The exercises on breathing, in the chapter on Voice Improvement, will help the student to develop and control his breathing for speaking.

Phonation

Phonation is the technical name for the production of vocal sounds. The mechanism used in phonation is the

[2] Gray, Giles Wilkeson, ed., *Studies in Experimental Phonetics.* Baton Rouge: Louisiana State University Press, 1936.

larynx, which serves a vital function of the body as a valve in the respiratory system. It is situated in the neck at the upper end of the trachea. Its framework of cartilages, like the ring-shaped cartilages of the trachea and bronchi, provides stiffening so that the respiratory channel will not collapse when the internal air pressure is low, as in inhalation. The lining of the larynx contains folds of tissue which can be brought together from opposite sides to close the *glottis* (opening to the trachea), either to keep foreign objects out or to keep the air in. By closing the glottis, the folds may

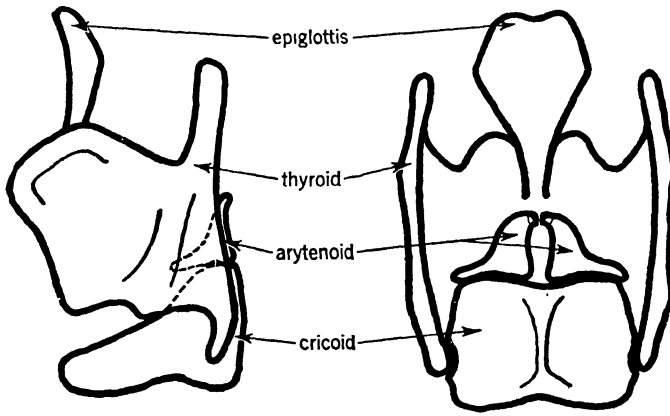

FIG. 6. THE LARYNX. The larger cartilages of the larynx viewed from the left side and from behind.

imprison air in the lungs to cushion and support the framework of the thorax for actions of the arms and trunk in lifting and pushing, and in such actions as defecation, in which pressure is exerted on the contents of the abdomen. The folds, which project like ledges from the walls of the larynx, are also the vibrators which produce the voice.

The skeleton of the larynx consists of three large single cartilages and three pairs of smaller cartilages. The three large cartilages are the *thyroid* (shield-shaped) cartilage, the *cricoid* (signet-ring-shaped) cartilage, and the *epiglottis*. The three pairs are the *arytenoid* (ladle-shaped) cartilages,

the *cuneiform* (wedge-shaped) cartilages, and the *corniculate* (little horn-shaped) cartilages.

The ring-shaped cricoid cartilage forms the base of the larynx. The heavy signetlike part (the *posterior quadrate lamina*) is at the back, and the band of the ring (the *anterior arch*) is toward the front. The thyroid cartilage forms the upper (front and side) walls of the larynx. It consists of two wings (*alae*) or plates (*laminae*) which are joined at the front at an acute angle, forming the "Adam's apple." At the back each wing has a projection upward and a projection downward (the *superior* and *inferior cornua*). The upper cornu on each side is attached by a ligament to the *hyoid bone*. The lower cornua are articulated with the outer surfaces of the cricoid cartilage by means of joints which permit pivoting and sliding movements.

The epiglottis is a tonguelike projection from the larynx into the pharynx at the base of the tongue. Its stem is attached to the inner surface of the thyroid cartilage near the upper border at the angle where the two wings are fused.

The resemblance of the arytenoid cartilages to ladles is somewhat fanciful. They sit side by side, like two little irregular pyramids, on the upper front border of the signetlike part of the cricoid cartilage. They are jointed with the cricoid in such a way that each can rotate, and they can slide laterally toward and away from each other. From the base of each arytenoid, there is a forward projection, called the *vocal process,* and a projection to the side and back, called the *muscular process.* The *vocal ligaments* are attached to the vocal processes, and the muscles which rotate the arytenoids are attached to the muscular processes.

The remaining pairs of cartilages are small in comparison to the others. The corniculate cartilages (also called the *cartilages of Santorini*) are articulated, or fused, with the arytenoids, forming little upward and backward extensions of their summits. The cuneiform cartilages (also called the *cartilages of Wrisberg*) are not articulated with the others, but are embedded so as to stiffen and support the folds of

tissue (the *aryepiglottic folds*) which extend from the summit of the arytenoid cartilage on each side to the margins of the epiglottis.

The interior of the larynx is somewhat funnel-shaped, with a constriction near the middle, which is made by two parallel pairs of folds in the lining tissue. Two folds project from each side toward the similar folds on the opposite side. The lower pair are the vocal folds, often referred to by the misleading term "vocal cords." The only cordlike thing about them is the glistening white band of tough connective tissue which forms the edge of each fold. These bands are called the vocal ligaments. They extend from the inner surface of the thyroid cartilage at the angle back to the vocal processes of the two arytenoid cartilages. The vocal ligaments seem less cordlike when it is understood that their tissue is continuous with a membrane called the *conus elasticus,* which lines the lower portion of the larynx, extending downward from the lower margin of the vocal ligaments to the upper border of the annular portion of the cricoid cartilage. The vocal ligaments may thus be properly described as the upper free margins of the lateral portions of the conus elasticus.

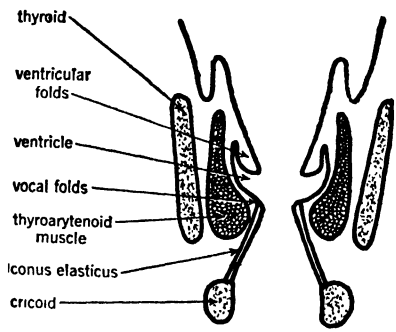

FIG. 7. DIAGRAMMATIC CROSS-SECTION OF THE LARYNX.

The projection of the upper and lower folds forms a recess between them, called the *ventricle.* Hence, the upper folds are called the *ventricular folds* ("false vocal cords").

The mechanism for closing the glottis by bringing the vocal cords together in the midline is fairly simple. The variable and complex manipulation of the larynx in phonation is based on this simple function. To facilitate the flow of air in inhalation, the glottis is widened by separation of

the vocal cords at their posterior ends. This separation is brought about by the pull of a pair of muscles which rotates the arytenoid cartilages outward so that their vocal processes swing apart, carrying the folds with them. In exhalation these muscles relax, and the glottis is narrowed, as if to present some resistance to the flow of air and prevent a too sudden collapse of the lungs. For phonation, certain other muscles rotate the arytenoids inward and slide them together so that the vocal processes carry the vocal folds toward the midline. The pressure of the air from the trachea seems to force them apart, but their elasticity makes them recoil quickly toward the closed position, to be forced apart again. This repeated vibratory action produces the voice.

The tension, thickness, and, to some extent, the length of the vocal folds can be controlled and varied by the contraction of a number of muscles. These variations and the variations in breath pressure produce changes in the frequency, intensity, and form of the vibration, and consequent changes in the pitch, loudness, and timbre of the voice. We have no space to describe these actions in detail (indeed, some of them are only imperfectly understood at present) nor even to name all of the muscles which take part in them; but the essential elements of the phonating mechanism will be clear if we name and describe the actions of the principal muscles which take part in the gross actions of the larynx.

Two paired muscles are principally responsible for the rotating movement of the arytenoid cartilages, which opens and closes the glottis. The muscle which pulls forward on the muscular process of the arytenoid, swinging the vocal process and the vocal fold toward the midline, is the *lateral cricoarytenoid muscle.* It originates along the upper border of the arch of the cricoid cartilage, and its fibers extend upward and backward to the front of the muscular process of the arytenoid. The muscle which pulls backward on the muscular process, swinging the vocal process outward and separating the vocal folds, is the *posterior cricoarytenoid muscle.* It originates on the posterior face of the cricoid

cartilage and extends upward and forward to the back of the muscular process of the arytenoid.

Several other muscles also participate in closing the glottis. The *interarytenoid muscle,* extending from the back of one arytenoid cartilage across to the back of the other, acts to swivel these cartilages about and slide them toward each other. The *thyroarytenoid muscle* originates on the inner surface of the thyroid cartilage at the angle and extends backward parallel with the vocal ligament to the arytenoid

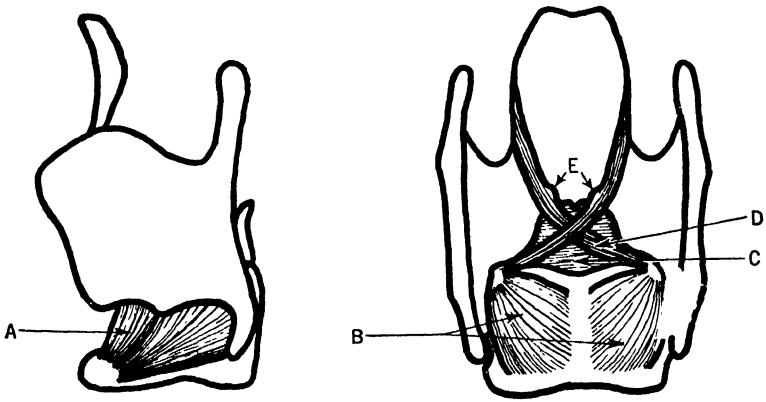

FIG. 8. LOCATION OF SOME OF THE INTRINSIC MUSCLES OF THE LARYNX. (A) the cricothyroid muscle; (B) the posterior cricoarytenoid muscle; (C) the transverse, and (D) the oblique portions of the interarytenoid muscle. Fibers of the oblique portions continue into the aryepiglottic folds. (E) shows the location of the cuneiform cartilages, embedded in the aryepiglottic folds.

cartilage, thus forming the deeper part of the vocal fold. Its contraction serves to pull the vocal bands together and to shorten and thicken them. The *cricothyroid muscle* extends from the front and sides of the cricoid cartilage upward and backward to the lower border of the thyroid cartilage. Its contraction pulls together the front parts of the thyroid and cricoid cartilages. Since these two cartilages are jointed together near the back, the resulting rocking action increases the distance between the arytenoids and the angle of the

thyroid, so that the vocal folds, which are attached to these two points, are lengthened and pulled together.

In addition to these *intrinsic* muscles of the larynx, which we have just named, a number of *extrinsic* and associated muscles, which link the larynx and the hyoid bone with other structures above and below, are concerned with vocalization. Their actions modify the position of the larynx, brace laryngeal structures against the pull of other muscles, and assist in the control of the vocal folds during phonation. These muscles are capable of tensions which interfere with good tone production, because they not only pull against laryngeal structures but also modify the size and shape of the resonant cavities of the throat and mouth. It is probably to these muscles that the voice teacher refers when he warns against improper tensions in the throat.[3]

The exact way in which the vocal folds vibrate has long been a subject of speculation and investigation. The folds can be seen and photographed by placing a small mirror in the th[illegible] so that it reflects a beam of light down into the laryn[illegible] also reflects back to the camera or the observer's eye the image of the illuminated interior of the larynx. But in phonation the folds vibrate so rapidly that they are blurred. Stroboscopic illumination can be used to make the folds appear to stand still or move slowly, but great care must be taken to avoid misleading optical illusions. Quite recently, new data on the vibration of the vocal folds have been secured by means of high-speed motion pictures of the larynx in action.

At the Bell Telephone Laboratories,[4] motion pictures of the vocal folds have been taken at the rate of 4000 frames per second. At this rate, a single cycle of vibration at the frequency of 125 cycles per second is photographed on thirty-two successive frames. When such a film is projected

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[3] Bartholomew, Wilmer T., "The Paradox of Voice Teaching," *Journal of the Acoustical Society of America*, 11, 1940, pp. 446-450.

[4] Farnsworth, D. W., "High-Speed Motion Pictures of the Human Vocal Cords," *Bell Laboratories Record*, 18, 1940, pp. 203-208.

at the normal speed of sixteen frames per second, the folds appear to vibrate only once in two seconds!

The observations made from these pictures have verified some of the results of study by older methods, and some new facts have been revealed. At a low frequency, such as 120 cycles per second, the folds appear to be relaxed, and the form of their vibration is very complex. The principal motion of the fold is horizontal, but there is also a slight vertical motion. The folds may be touching for as much as one half of the cycle. The opening begins from underneath, between the forward portions of the folds, and progresses upward, outward, and backward. As the frequency is increased, the folds are perceptibly lengthened and their stiffness seems to be increased so that they vibrate more simply. The opening from underneath becomes less noticeable; the time they remain touching becomes less than the time they are separated; and the width of the greatest opening decreases. In the highest range of the voice (the falsetto, or "head voice"), the period of opening in each cycle becomes so much greater than the period of closure that the glottis may not close at all. When frequency is held constant and intensity is varied, the period of closure varies, becoming longer at higher intensities.

The human voice varies in the frequency range of which it is capable, and in the range which a person actually uses in speaking. The voice is usually capable of producing a range of about three octaves, including the tones at the extreme ends of the range which are not musically acceptable. The normal singing ranges stated by Curry[5] amount to from one and a half to two octaves, or two and a half octaves in exceptional cases. The range used in speaking seems to vary with the habit, temperament, or ability of the speaker, and with the nature of the material spoken. The average frequency range measured by Cowan[6] in fourteen different dramatic

[5] Curry, Robert. *The Mechanism of the Human Voice*, p. 111. New York: Longmans, Green & Co., 1940.

[6] Cowan, Milton, "Pitch and Intensity Characteristics of Stage Speech," *Archives of Speech*, supplement, 1936, p. 60.

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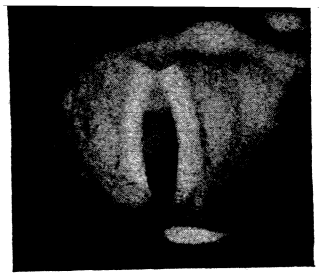

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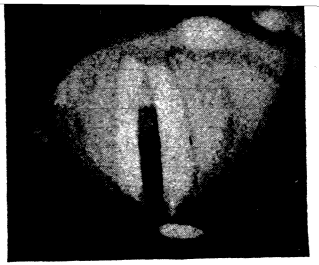

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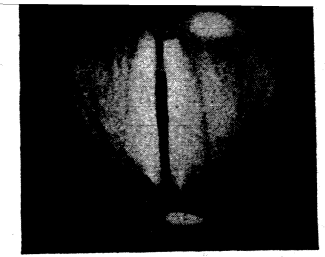

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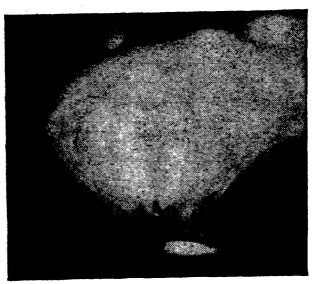

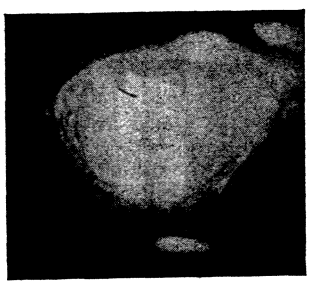

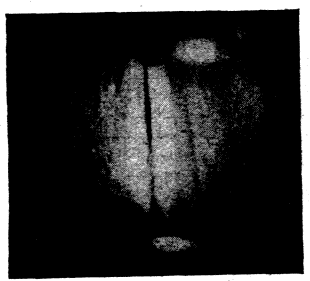

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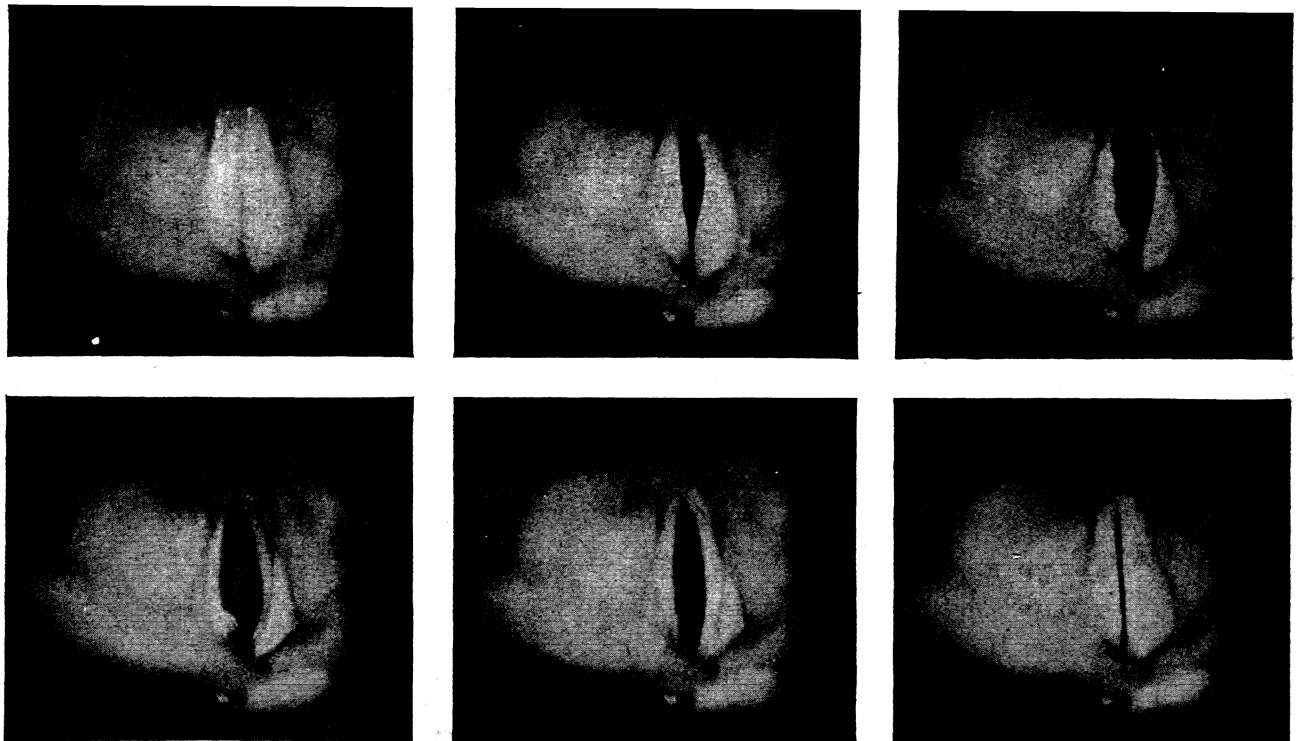


Bell Telephone Laboratories

passages delivered by ten well-known professional actors was two octaves. A number of studies of the voice usage of university students and teachers of speech[7] show that in reading a short sample of unemotional material, poor readers use as narrow a range as half an octave, while superior readers may use as great a range as an octave in reading the same passage. In expressing several different emotions, a good reader may display a range of over three octaves. It is significant, however, that mere width of range does not constitute vocal superiority.

Resonance

Before discussing resonance in human speech, it is necessary to make clear the distinction between the general and the technical meanings of this term. In popular usage, "resonance" often seems to refer to a vague but praiseworthy attribute of a speaking voice which is in some way attractive or pleasing to listeners. It is to be noticed that voices which are feeble, high-pitched, thin, shrill, hoarse, strident, "throaty" or "nasal," or in any way unpleasant are not described as "resonant." Actually, neither the strength nor the pitch nor the quality of the voice is dependent solely on resonance. The voice is the product of breathing, phonation, and resonance; unpleasant or poor voices do not result from "lack of resonance" or faulty management of the resonators alone.

In the chapter on the Physics of Speech, resonance is described as the condition which exists when the natural frequency of a body in forced vibration agrees with the frequency of the vibratory force which is acting upon it. In the case of the voice, the vibratory force is the product of the vibrating vocal folds, and the most important of the

[7] See the articles by Don Lewis and Joseph Tiffin; Gladys Lynch; and Elwood Murray and Joseph Tiffin, in *Archives of Speech*, 1, 1934, No. 1; and also an article by Grant Fairbanks: "Recent Experimental Investigations of Vocal Pitch in Speech," *Journal of the Acoustical Society of America*, 11, 1940, pp. 457-466.

bodies which are forced to vibrate are the masses of air that are enclosed in the respiratory passages, principally the cavities of the larynx, pharynx, mouth, and nose. It is the object of this section of the book to introduce the student to the fundamental facts that have been discovered concerning vocal resonance.

Although a few attempts have been made to find measurable objective differences between good and poor voices, most of the available information about vocal resonance is concerned with the basic problem of the nature of the vowel sounds. The vowel sounds are variations in vocal timbre which are produced by adjustments of the vocal resonators. Observations of the fact that the vocal cavities are tuned to different pitches for different vowels were published as early as 1619,[8] but it was not until the nineteenth century that more accurate and complete information led to the formulation of plausible theories of vowel production. The theory most generally held today is identified with the names of Wheatstone and Helmholtz, and is variously called the resonance, harmonic, or cord-tone theory. According to this theory, the vowels are produced by selective action of the tuned cavities on harmonic components of the complex tone produced by the vibrating vocal folds. The vowel thus consists of the tone which is produced in the larynx (the "cord-tone"), modified by resonance. Different vowels are produced by adjusting the resonators to strengthen the complex laryngeal tone in different frequency regions.

A second view of the production of vowels is associated with the names of Willis, Hermann, and Scripture, and is called the puff, transient, inharmonic, or cavity-tone theory. According to this view, the action of the vocal folds produces a series of puffs of air, each of which arouses a transient response in the tuned cavities of the speech tract. The rapid succession of puffs results in continued vibration of the air in the cavities, thus producing the complex vowel tone, the

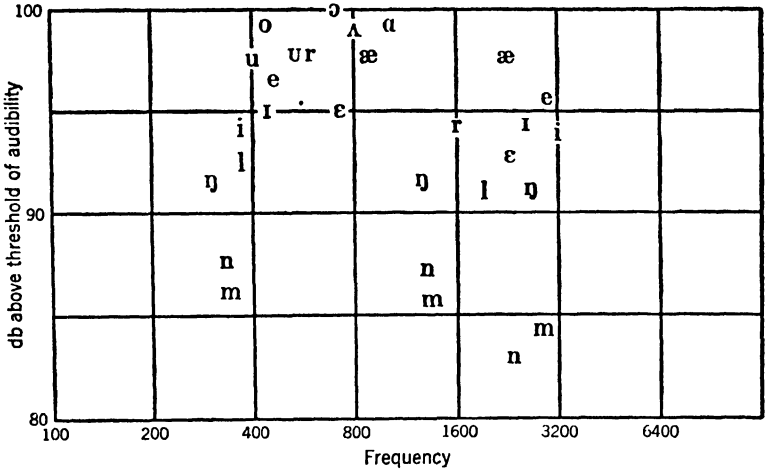
[8] Helmholtz, H. L. F., *Sensations of Tone*, translated by Alexander J. Ellis, p. 108. New York: Longmans, Green & Co., 1885.

components of which do not need to be in harmonic relationship.

Most investigations of the characteristics of the vowels are based on the resonance theory. The characteristics appear in the harmonic analyses of vowel tones as concentrations of energy at various frequencies; that is, the acoustic spectrum of a vowel shows that the components in certain characteristic frequency regions are more intense than the other components. The contour of the spectrum in these regions resembles that of the response of a simple resonator. Comparison of many such acoustic spectra shows that each vowel has, within certain limits, a stable pattern of energy distribution which distinguishes it from other vowels. Variations in the pattern are found among the vowels produced by different speakers, and among the analyses of different investigators. Some of these variations probably represent the audible differences which are readily discernible between voices, and others may be due to differences in methods and apparatus employed in the analyses. The accompanying table[9] shows the similarities and differences among the analyses reported by several investigators of American vowel sounds. It will be noted that the number of characteristic regions reported is greater in the later investigations, probably because of refinements in the instruments used. It is believed that the presence of the one or two most prominent characteristic frequencies is sufficient for identification of the vowel by ear. Early investigators, whose instruments and methods revealed only the most prominent components, classified the vowels as "singly resonant" and "doubly

[9] Laase, Leroy T., "The Effect of Pitch and Intensity on the Quality of Vowels in Speech," *Archives of Speech*, 2, 1937, pp. 41-60. The data of the other investigators were obtained from the following sources: Miller, D. C., *The Science of Musical Sounds*, Macmillan, New York, 1916; Crandall, I. B., "The Sounds of Speech," *Bell System Technical Journal*, 4, 1925, pp. 586-626; Steinberg, J. C., "Application of Sound Measuring Instruments to the Study of Phonetic Problems," *Journal of the Acoustical Society of America*, 6, 1934, pp. 16-24; Black, J. W., "The Quality of a Spoken Vowel," *Archives of Speech*, 2, 1937, pp. 7-27; Lewis, Don, "Vocal Resonance," *Journal of the Acoustical Society of America*, 8, 1936, pp. 91-99.

resonant." Figure 10, after Fletcher,[10] shows roughly the principal frequency regions, together with their power in average conversational speech, for several vowels.



Courtesy of D. Van Nostrand Company, Inc.

FIG. 10. THE PRINCIPAL FREQUENCY REGIONS OF SEVERAL SOUNDS AND THEIR POWER IN CONVERSATIONAL SPEECH.

TABLE 3

CHARACTERISTIC FREQUENCY REGIONS (IN CYCLES PER SECOND) OF THE VOWEL [ɑ] AS REPORTED BY VARIOUS INVESTIGATORS

Investigators	*First Region*	*Second Region*	*Third Region*	*Fourth Region*	*Fifth Region*
Miller....	910–1050				
Crandall .	825	1200			
Steinberg.	680	1050–1450	2500		
Black....	670–850	1100–1300	2400–2600		
Lewis....	600 860	1050–1450	2600–2800	3000–3400	
Laase....	570 -850	1100–1300	2300–2600	3200–3600	3800–4000

(*After Laase*)

[10] Fletcher, H., *Speech and Hearing*, p. 76. New York: D. Van Nostrand Co., Inc., 1929

It is difficult to relate the results of these physical analyses of the vowel sounds with the actions of the individual vocal resonators. Resonators in general are of several types, which differ in their action and in the sharpness of their tuning. A megaphone, for example, is a resonator which increases the efficiency of the voice in emitting acoustic energy at any frequency higher than the fundamental frequency of the megaphone.[11] On the other hand, the column of air in a tube like an organ pipe or the volume of air in a Helmholtz resonator vibrates most readily at only one frequency, or a narrow band of frequencies. When a complex tone acts on such a resonator, only those components which are in tune (or nearly in tune) with the resonator are amplified or transmitted. The cavities of the vocal tract are not shaped simply like a megaphone or a tube or a sphere; they are irregular and variable in both shape and size, and also in the rigidity and density of their walls. Also, these resonators do not act singly, but all of the air masses in the respiratory passages, both above and below the glottis, act together with the vocal folds in a complex vibratory system.

Further difficulty in theorizing about vocal resonance in speech arises from the fact that the vowels are typically of short duration and continuously changing in fundamental frequency. As it is usually discussed, resonance is concerned with steady tones. The steady state of vibration does not begin instantaneously, for an appreciable time is required for a vibrating body to reach its full amplitude of vibration. Vowels in connected speech are often as brief as a few hundredths of a second in duration, and analysis shows that no two consecutive waves are exactly alike.[12] not only because of the changing fundamental voice frequency, but also because the cavities are changing as the speaker proceeds from one sound to the next in uttering words. On this account

[11] Megaphones are discussed in Stewart, G. W., *Introductory Acoustics* pp. 92-93, D. Van Nostrand Co., Inc., New York, 1933; and in Watson. F. R. *Sound*, p. 78, John Wiley and Sons, Inc., New York, 1935.

[12] Black, John W., *op. cit.*

many of the studies of vowel sounds are based on sung or intoned vowels rather than on those of continuous, connected speech.

With these complexities and difficulties in mind, it will be understood why the present-day knowledge of the physical and physiological phenomena of vocal resonance is incomplete, and why our information has to be eked out with assumptions and approximations to make a plausible theory.[13]

Happily, it is not necessary to have any theory in order to speak or to sing well. But the absence of any complete and simple description of the resonance phenomena of the voice has led to an astonishing amount of misunderstanding and controversy between the various groups of people who are interested in the voice, but whose aims, methods, and terminology differ.

Such concepts as "chest resonance," resonance "in the facial mask," and "forward placement" of the voice seem to be justifiable and useful to the teacher of voice, but fanciful and even absurd to the physicist. The chest does vibrate palpably, especially during the production of strong tones of low frequency, but it is not an air-filled cavity like the mouth. It has been demonstrated that the vibrations may be conducted to the chest wall through the tissues of the body.[14] The tissues of the face and head may tingle with the vibrations of the voice, but the paranasal sinuses have openings too small for them to act as resonators. Sensations of tension and vibration in the mouth and throat may vary in accord with audible variations in vocal quality, but the wave lengths of vocal tones are too great to be focused by reflectors as small as the surfaces of the epiglottis or palate.

[13] It is of interest to note that musicians and the builders of musical instruments are also without a completely adequate theoretical basis for their work. D. C. Miller, in *An Anecdotal History of the Science of Sound*, p. 43, Macmillan, New York, 1935, points out that the actual and the theoretically predicted lengths of even so simple and stable an instrument as the flute differ by over two inches.

[14] Wise, C. M., "Chest Resonance," *Quarterly Journal of Speech*, 18, 1932, pp. 446-452.

It has recently been pointed out [15] that the misunderstanding and controversy over these matters should disappear when the physicist learns that such concepts as these are related to the vocalist's sensations in singing, and to some extent in speaking, in such a way as to be of real help to the voice teacher in achieving desirable voice production, and when the voice teacher learns that the actual acoustic phenomena cannot validly be deduced or inferred from the subjective imagery of the vocalist.

Articulation

Articulation refers to the use of the lips, teeth, tongue, palate, velum (soft palate), and other muscles and structures in interrupting and modifying vocal sounds, and in interrupting and restricting the flow of expelled breath to produce the various voiced and voiceless sounds of speech. Broadly used, this term includes the shaping of the resonators for the vowels and diphthongs. Customarily, it refers principally to the production of consonants, in which the movements and contacts of the articulators are more definite and more clearly sensed by the speaker.

The movements and contacts of the articulators may vary from complete obstruction of the stream of breath to mere shaping of the cavities and their outlets. Complete obstruction of the stream of expelled breath and subsequent release of the pent-up air produces the stop and plosive sounds. Partial obstruction of the passage, through which the air rushes with audible turbulence, produces the noises called fricative sounds. Constriction of the mouth and throat so as to modify the volume of these cavities and the size of their openings produces the vowels and the vowel-like consonants. Movement of the articulators from one position to another produces diphthongs and consonantal glides. Such obstructions and constrictions may be produced at various points from the lips to the glottis, either with or without phonation.

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[15] Bartholomew, Wilmer T., *op. cit.*

The velum may drop to permit the escape of sound through the nasal passages, as in the nasal consonants, or it may be raised to close the entrance from the pharynx to the nose, as it must in producing all those sounds which require air pressure in the mouth.

The accurate description of the movements of the articulators in producing all of the sounds of speech is beyond the scope of this section. The movements are somewhat different in different languages, and in different dialects of the same language, and even among individual speakers of the same dialect. Also, different speakers may produce similar acoustic and auditory effects by different articulatory means, and one speaker may use a variety of articulatory movements in the several styles of speaking which he uses in various circumstances. These problems were discussed in the chapters on Phonetics.

A great variety of methods and apparatus have been used for the study and measurement of the movements and contacts of the articulators. Some of them are subject to error because they cannot be used without making the subject of the experiment speak in an artificial, self-conscious manner; some of them unavoidably interfere with the normal movements of the lips, tongue, jaw, or velum; and some methods can be applied only to isolated sounds, and not to the rapid succession of sounds in normal, connected speech. Notwithstanding these handicaps, useful information has been gained by patient, painstaking observation, candid awareness of the limitations of the methods, and caution in extending the interpretation of the results.

Something about articulation can be learned by patient self-observation of the sensations of movement and contact in the mouth, and by watching the lips and the front of the tongue in a mirror. Attempts have been made (with some degree of success) to record and measure the less accessible and invisible movements by inserting into the mouth bent wires, rubber bulbs, or tiny electrodes which are connected mechanically, pneumatically, or electrically with

writing levers which record the movements, pressures, or contacts on paper. Accurate information on the position and area of contact between the tongue and the palate can be obtained by palatography, which involves fitting a thin, powdered, artificial palate to the roof of the mouth, producing an isolated sound, and then observing where the contact of the wet tongue has removed the powder from the surface. Gross changes in the pressure of the air at the opening of the mouth or nose can be recorded by placing an airtight mask over the mouth, or fitting tubes in the nostrils and connecting the mask or the tubes to a pneumatically operated writing lever.

Several investigators have made use of X-ray photographs to learn the position of the organs at a given instant. A recent development [16] is the synchronous recording by X-ray motion-picture camera, cathode-ray oscillograph, and phonograph. This method gives simultaneous pictures of the movements of the articulators, the form of the sound waves, and a phonograph record for subsequent reproduction and study by ear.

Another interesting method for studying the mechanism of speech is the synthesis of speech sounds by acoustic or electrical means. Talking machines have been imagined by men for many centuries, and during the last century several devices were made which would produce more or less recognizable isolated vowel and consonant sounds. But not until a very few years ago have men known enough about the nature of speech sounds to build an instrument which can produce intelligible connected speech by purely synthetic means.

The early devices for synthesizing speech sounds were intended to build up the complex tones of the vowels, for instance, by combining pure tones in the proper relationships of frequency and intensity. Tuning forks were used by

[16] Curry, Robert, "Two Simplified Techniques for Synchronized X-Ray, Sound Recording and Cathode-Ray Oscillographic Studies of Speech," *Review of Scientific Instruments*, 8, 1937, pp. 382-385.

Helmholtz, and organ pipes by Miller, as the sources of the component pure tones. More recently, electrical oscillators have been utilized. Another scheme made use of an air-blown vibrator, such as a reed, to secure complex tones, and resonators of various shapes, sizes, and materials to modify the relative intensities of the harmonics of the reed tone. After experimenting with such materials, Sir Richard Paget learned to produce a few sounds and one or two words by using his cupped hands as a resonator.[17] But none of these devices is capable of producing sounds in rapid succession as they occur in normal speech, or of producing the transitional sounds which link the successive phonetic units into the continuous flow of connected speech. A mechanical solution of this problem has never been achieved.

The first really successful device for the synthesis of speech is not mechanical but electrical. It is the instrument called the "voder" (a name coined from Voice Operation DEmonstratoR) which was built by the Bell Telephone Laboratories and first shown publicly in January, 1939. The voder is composed of electrical analogs[18] of the acoustic elements of the human speech mechanism. In making the vowel sounds, an electrical oscillator which produces waves o very complex structure, takes the place of the larynx, and number of tuned electrical filters, each of which passes only narrow band of frequencies, take the place of the vocal esonators. A number of keys permit the operator to control he spectrum of the complex tone by switching combinations of filters into the circuit so as to produce the characteristic spectrum of any desired sound. The electrical oscillations are converted into sound waves by a loud-speaker. The voiceless sounds of speech are produced by controlling the

[17] Directions for this stunt are given in Sir Richard Paget's book, *Human Speech*, Harcourt, Brace & Company, New York, 1930.

[18] The analysis of mechanical, electrical and acoustical dynamic systems into analogous circuit elements has aided in the solution of many practical problems, for it makes possible the application of the same basic mathematical theory to all three kinds of systems. See Olsen, Harry F., and Massa, Frank, *Applied Acoustics*, Chapter 2, sec. ed. Philadelphia: P. Blakiston's Son & Company, 1939.

spectrum of another oscillator which produces a hisslike noise by electrical means. Some idea of the complexity of operating this instrument is conveyed by the fact that the operators of the voder required about a year and a half of training to prepare them to make it speak in public.

The voder without the manual controls is a part of a still more remarkable device which analyzes the speech of a person and transmits the results of the analysis in a sort of electrical "code" to the synthesizer which then automatically reconstructs the speech.[19] Because it reduces the information about the original speech to a code of varying electric currents, this instrument is called the "vocoder." The remade speech is quite intelligible, although it has been said that the machine speaks with a "slight electrical accent."

A great many new studies of speech and of the perception of speech will be possible with the vocoder. Using the analyzer alone, quantitative information about speech sounds is available. Manipulation of the controlling currents between the analyzer and the synthesizer makes it possible to vary each speech element independently of the others in the reconstructed speech. For example, the pitch of the remade speech can be controlled so as to be like that of the original, or to vary over twice the range or half the range of the original, or in any desired ratio, or to have no pitch variation at all. The voice can be eliminated entirely, leaving a whispered copy of the original speech and making the examination of the spectrum easier. Such manipulations demonstrate strikingly to the ear the part played by each of the basic factors of speech.

Just two hundred and fifty years ago an English essayist,[20] in speaking of the state of scientific knowledge of his time, wrote, ". . . we pretend to give a clear Account how Thunder and Lightning (that great Artillery of God Almighty) is

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[19] Dudley, Homer, "Remaking Speech," *Journal of the Acoustical Society of America*, 11, 1939, pp. 169-177

[20] Sir William Temple, *An Essay upon the Ancient and Modern Learning*, 1690.

produced, and we cannot comprehend how the Voice of a man is Framed, that poor little noise we make every time we speak." A great deal of progress has been made since that time, but much remains to be learned. Perhaps this chapter will have indicated to the beginning student of speech that the difficulties and complexities of the human speech mechanism challenge the best ingenuity that can be brought to bear on them.

Questions and Exercises

1. From what you have read of the principle of antagonism in muscular action, explain the term "diaphragmatic control" as it is used with reference to breathing in singing and speaking.

2. Prove to your own satisfaction that you can inhale and exhale (*a*) without raising the ribs noticeably, and (*b*) without altering the curvature of the abdominal wall. Explain the difference in terms of muscular action.

3. Does your voice carry better (or, does your voice require less apparent effort) in speaking or singing while you are standing or while you are sitting? Why?

4. If you have access to a piano or other suitable instrument, determine the range of your voice from the lowest to the highest tone you can produce. Do your speaking tones lie mostly above or mostly below the middle of your total range?

5. Using the tips of your fingers *gently*, locate the notch of your thyroid cartilage (at the top of the Adam's apple). With the tip of the index finger in the notch, the tips of the thumb and second finger may feel the upper borders of the thyroid on either side. See if you can locate, just above the notch, the lump which represents the body of the hyoid bone, and, just below the thyroid cartilage, another lump representing the cricoid cartilage. Notice the vibration when you phonate. Do you notice any movements of the cartilages as you hum up and down the scale? Use only slight pressure of your fingers in these explorations.

6. Transient vibrations can be set up in the air in the vocal cavities in a number of ways. With your mouth opened as for [u], try clicking your tongue against the roof of your mouth, or snapping a finger smartly against the taut cheek near the mouth opening, or snapping your finger against your throat over the

side of the thyroid cartilage. Notice that you can modify the pitch of these sounds either by changing the position of the tongue or by changing the size of the mouth opening. Explain these modifications in the terms used in the discussion of resonance.

7. Explain clearly, as though to a person who has not read this chapter, the two views of the production of the vowels.

8. From what has been said about the difference between spoken and sung vowels, what can you infer concerning the relation between vocal resonance and rate of utterance in speaking?

9. An "artificial larynx" can be made by conducting the tone from any convenient source, such as a toy balloon squawker or a pitch-pipe blown by a bellows or other source of air-pressure, through a short rubber tube well into the mouth. Shaping the cavities of the vocal tract as if you were whispering will produce the vowels clearly, and with a little practice anyone can learn to speak with such an artificial voice in spite of the presence of the tube. Try it with several friends or classmates and identify the characteristics of the individual speaker which persist in spite of the fact that all of you are speaking with the same voice.

CHAPTER 7

The Physics of Speech

When a person speaks, he produces sound waves which convey meanings to those who can hear and interpret them. The aim of this chapter is to describe these waves. If you look in your dictionary under "wave," you will find definitions to fit light waves, crime waves, hot waves, cold waves, waves on the ocean, waves of enthusiasm, waves of terror, and permanent waves, as well as sound waves. Disregarding the meanings which have come about by extension and analogy, a wave (in the physical sense in which we must use the term here) is a traveling disturbance. A wave is an alteration of some property of a physical medium which spreads from point to point in the medium.

A ripple on the surface of a pool of water is a change in the arrangement of the particles of water which make up the surface; the change in the shape of the surface spreads across the pool. Sound waves are alterations of pressure, spreading through air or some other elastic material. The variations in pressure are produced by the motion of infinitesimal particles of the material.

Before we begin our examination of sound waves, let us look at the ripples more closely. Ripples on the surface of water are familiar to all of us. They are visible, they travel slowly, and we can produce them in any puddle or bathtub, or in a shallow ripple tank in the laboratory. If we bear in mind that ripples and sound waves are analogous, but not entirely alike, we can observe in the ripples a number of phenomena which will help us to visualize and understand the invisible waves of sound.

Wave Motion

If the surface of a pool of water is disturbed at regular intervals at the same spot, a train of waves spreads outward from the disturbance, and every point of the surface is set in motion as the waves cross it. This motion is made more obvious by a crumb of cork floating on the surface, participating in the motion of the water. When the pool is undisturbed, the cork remains at rest; but when ripples disturb the surface, the cork rises and falls as each wave reaches and passes it. When the last wave has passed, the cork is just where it was before any disturbance reached it.

Evidently, the motion of the water itself (represented by the motion of the crumb of cork) is quite a different thing from the spreading of the wave along the surface of the water. The wave moves along the surface, disturbing in turn each point in its path. Each disturbed portion of water executes an oscillation up and down and then comes gradually to rest in its original position. Thus the wave advances without any corresponding advance of the particles of the medium.

The "particles" of the medium are entirely imaginary. Ordinarily we think of water and air as being continuous in structure. Actually, fluids are made up of molecules which are at some distance from each other and in violent motion. This kind of motion we know as heat. For visualization and analysis of wave motion, it is convenient to imagine that these substances are neither continuous in structure nor molecular, but made up of small, discrete particles.

When a sound wave disturbs a medium like air, the motion of the particles in the medium is not transverse, as in the water ripples, but longitudinal. That is, the particles oscillate back and forth in the direction in which the wave is traveling. Of course, no one has ever seen a particle of air oscillating back and forth. Our knowledge of the nature of the motion has, until recently, been based on observation of the effects which it produces.

But direct visual evidence is now available in an experiment which is exactly analogous to our observation of the cork bobbing up and down on the ripples.[1] Tobacco smoke or (for photography) very fine cork dust is introduced into an air-filled tube. When they are brilliantly illuminated and suitably magnified, the separate particles of smoke or cork can be seen floating in the air. Then intense sound waves are introduced into the tube, and the particles, participating in the motion of the air, are seen not as points but as lines, showing that they oscillate back and forth with great rapidity.

Mass and elasticity are the properties of a body or substance which enable its particles to transmit wave motion. *Mass* is the quantity of matter in a body, indicated either

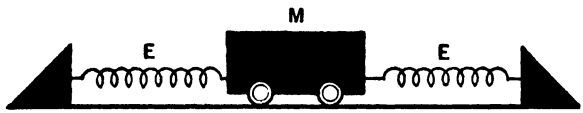


FIG. 11. A MECHANICAL ARRANGEMENT TO DEMONSTRATE THE EFFECTS OF MASS AND ELASTICITY.

by its weight or by the amount of force required to move it. *Elasticity* is the property of a body which makes the body tend to resume its normal shape, or bulk, or attitude, after it has been distorted or disturbed. Since the body has mass, it also has *inertia,* which means that it continues in its existing state of rest or uniform motion in a straight line unless some force changes that state.

A simple mechanical model will illustrate the vibration of a body having inertia and elasticity. In Figure 11, the weighted car represents mass, and the springs on either side of it represent elasticity. When a force is applied to the mass, producing a displacement (moving it to one side), one spring is compressed and the other is stretched so that an equal and opposite force tends to restore the mass to its

[1] Andrade, E. N. da C., "Absolute Measurement of Sound-Amplitudes and Intensities," *Discussion on Audition,* The Physical Society, London 1931.

original position. This restoring force sends the car back, but unless there is a great deal of friction in the running gear of the car, its inertia will carry it beyond its resting position and it will be displaced on the opposite side. This displacement involves compressing and stretching the springs so that a restoring force is again set up which sends the car back, and thus the car will vibrate to and fro until the energy originally imparted to it is used up in overcoming friction and fanning the air.

Figure 12 is a diagram representing a row of particles of a substance having mass and elasticity. Each of these particles is capable of oscillation like that of the car in Figure 11. If a force is applied to the first particle, displacing it in the

FIG. 12. A ROW OF PARTICLES OF A SUBSTANCE HAVING MASS AND ELASTICITY.

direction of its neighbor, the spring between them will be compressed, and the second particle will also be displaced. The motion will be communicated to the third and fourth particles and so on to the end of the row. Thus a wave of displacement travels along the row of particles. You will notice also that the displacement produces a crowding together of the neighboring particles. This crowding together is called a *compression.*

When the first particle reaches the end of its swing to the right, the restoring force in the compressed spring will send it back toward its position of rest. Inertia will cause it to overshoot this position, and a displacement in the opposite direction will occur. In this phase of the vibration you will observe that the spring between the first and second particles will become stretched. Thus the second particle will be pulled back, following the first, and followed by the third and fourth and so on. In this backward swing of the particles, they will be separated by greater distances than before. This condition is called *rarefaction.*

As the particles continue to swing back and fourth, successive waves of displacement travel along the row. The waves of displacement are inevitably accompanied by waves of compression and rarefaction.

In addition to the traveling wave of displacement and the resulting wave of pressure variation, another aspect of the motion of the particles is important. It may have occurred to you that the backward and forward swing of the little car in our first illustration and of the particles in the second is very much like the swing of a simple pendulum. The prin-

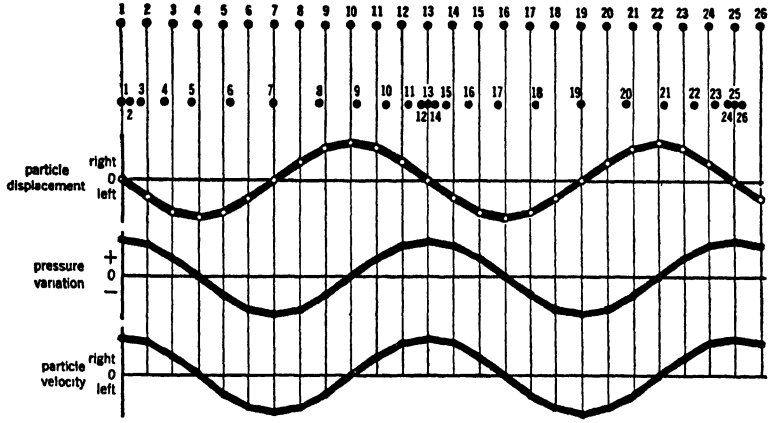


FIG. 13. WAVE MOTION IN A ROW OF PARTICLES. The variations in displacement, pressure, and velocity of the particles in wave motion are represented.

cipal difference, in fact, is that the pendulum swings through an arc of a circle, whereas our particles swing back and forth in a straight line. The important similarity is that in the swinging pendulum and in the oscillating particle the velocity varies in a characteristic way. At the end of the swing, there is no velocity. The velocity increases as the particle approaches the middle of the swing, and it is at its maximum value at the instant when the particle is in its resting position. The velocity then decreases gradually until its value is again zero, when the particle is at its maximum

displacement. The sound wave can be considered to be a wave of variation in the velocity of the oscillating particles. The definition of sound which is approved by the American Standards Association[2] states that sound is an alteration in pressure, particle displacement or particle velocity propagated in an elastic material.

Figure 13 will repay careful study. It shows, first, a row of particles at rest in an undisturbed medium. The second row shows the positions of the same particles when sound waves are traversing the medium from left to right. The three curves are graphic representations of the displacements of the particles, the variations in pressure, and the velocities of the particles, respectively. Notice the relations between maximum displacement, maximum pressure variation, and maximum velocity. At maximum displacement there is no variation from normal pressure; at maximum displacement the velocity of the particle is zero; and the greatest variation from normal pressure occurs at the points of no displacement, which are also the points of greatest particle velocity.

Simple Harmonic Motion

Notice also the smooth form of the curves which represent the alterations in displacement, pressure, and particle velocity. This is the kind of curve which would be drawn by a pendulum swinging back and forth across a steadily moving surface. A bristle waxed to a prong of a vibrating tuning fork would draw such a curve on a smoked surface carried steadily past it. This sinuous line is the graphic representation of the simplest kind of periodic motion. Periodic means that the motion is repeated in equal successive periods of time. The name of this motion, familiar to every student of physics, is *simple harmonic motion.*

Simple harmonic motion is an ideal which is approached by the to and fro vibrations of the prongs of a tuning fork, by the motion of the air particles which are disturbed by the

[2] *American Tentative Standard Acoustical Terminology—Z24.1-1936.* New York: American Standards Association, 1936.

prongs of the fork, and, under certain conditions, by the parts of the hearing mechanism which are set into vibration by the sound waves from the fork. The sensation aroused by such vibrations is called a *pure tone.* The tones of musical instruments and of the human voice are not pure tones, but *complex tones.* A complex tone can be considered to be composed of a number of pure tones; a complex wave motion can be analyzed into a number of component simple harmonic motions. Some understanding of simple harmonic motion will be necessary, therefore, in order to understand the physical nature of the complex sounds of speech.

Simple harmonic motion is defined and described in a number of different ways. One way is to say that it is the motion of a body which has been displaced and then allowed to vibrate freely, provided that the amount of force necessary to displace it is proportional to the amount of displacement. Another description is the statement that simple harmonic motion is the linear projection of uniform circular motion. Reference to a mechanical model will show what this statement means. A wheel is mounted horizontally, that is, with its axle vertical, and arranged to rotate at a constant speed so that the motion of a point on its rim will be "uniform circular motion." A crank handle or some other object is mounted on the rim, and a source of parallel rays of light is set level with the wheel so that the shadow of the wheel and the crank handle will be projected on the wall of the room. As the light source is level with the wheel, the shadow of the wheel will be a line, and as the wheel rotates at uniform speed, the shadow of the crank handle will move back and forth along the line, showing a projection, on a line, of uniform circular motion.

Figure 14 shows some of the details of simple harmonic motion,[3] illustrating how the simple harmonic motion of a

[3] A more complete discussion for students equipped with elementary algebra and trigonometry is given in *Sound,* by F. R. Watson. See also *Sound Waves and Acoustics,* by M. Y. Colby, Henry Holt and Company, New York, 1939. G. W. Stewart's *Introductory Acoustics* gives a nonmathematical account.

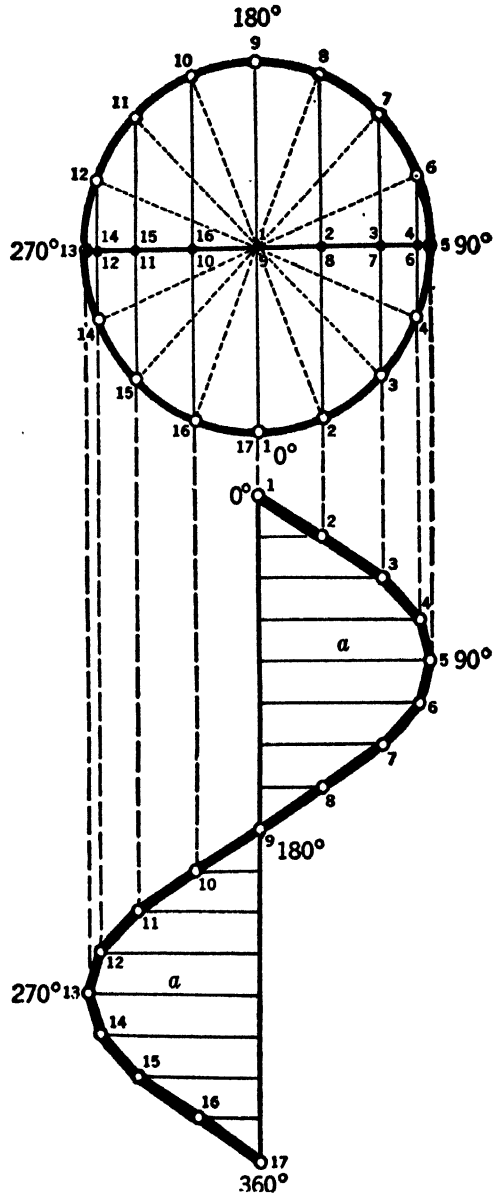


FIG. 14. SIMPLE HARMONIC MOTION.

point on the diameter of an imaginary circle is related to the uniform motion of a point on the circumference, and how the motion is represented graphically. As the point is displaced from its resting position at the center of the circle, first to the right, then back through the center a similar distance to the left, and then back to its original position again, it will occupy successively the numbered positions along the diameter. The positions of the corresponding points are similarly numbered on the circumference and on the graph of displacement at the right of the figure.

The division of the circle (called a "circle of reference") into 360 degrees gives a convenient method of identifying the position of the moving point on the diameter at any instant in its cycle of motion, by stating the fraction of the complete circle through which the corresponding point on the circumference has passed at that instant. The fraction, stated in degrees, is called the *phase* at that instant. Thus, in Figure 14, the point in the position marked 3 has passed through one-eighth of a complete cycle; its phase is, then, one-eighth of 360, or 45 degrees.

The difference in phase between two waves is also expressed in degrees. In Figure 13 the graphs show that particle velocity and displacement in simple harmonic motion differ in phase by one-fourth of a period. They are said to differ in phase by 90 degrees, or they are 90 degrees out of phase.

The circle of reference serves to explain still another common acoustical term. The distance of the oscillating particle from its position of equilibrium at any time is proportional to the sine of the angle made by the corresponding point on the circle with its zero position. Consequently the curve representing displacement (as in Figure 14) is the same as the curve made by plotting the values of the sines of the successive angles from 0 degree to 360 degrees at equal successive intervals of time. Such a curve is called a *sine curve*. Simple harmonic motion is also referred to as

sinusoidal motion, and the sound waves of a pure tone are called *sine waves.*

The Dimensions of Sound Waves

A number of necessary terms can now be defined. A *cycle* is a complete back and forth oscillation of a vibrating body, or, in more general terms, a cycle is a complete set of the recurrent values of a periodic phenomenon. The *frequency* is the number of cycles occurring in one second. A *period* is the time required for one cycle. The *amplitude* is the greatest displacement of the particle in its oscillation. The amplitude of the simple harmonic motion in Figure 14 is the radius of the circle of reference. It is indicated on the graph at *a.*

The sound waves to which the human ear responds are those with frequencies from about 20 cycles per second to about 20,000 cycles per second. That is to say, sinusoidal vibrations within that frequency range will produce a sensation of tone in the normal or typical ear. Sound waves of a frequency below 20 cycles per second are not heard as a tone. Waves of frequencies higher than about 20,000 cycles per second are known as *ultra-audible sound* or *supersonic* waves. They often accompany audible sounds. Their existence is detected by means of special instruments. The range of fundamental sound frequencies in the musical scale may be exemplified by the compass of the piano, which extends from the *A* at 27.5 cycles per second to the *C* at 4186 cycles per second. The range of the human voice is much narrower, as we shall see subsequently.

The amplitude of ordinary sound waves in air is extremely small. For average conversational speech, Fletcher[4] says that the air particles near the opening of the mouth vibrate through a distance of approximately one one-hundredth of a millimeter. Amplitude is a theoretical measure not often used in practical acoustics. The energy of a sound wave is usually referred to as its *intensity,* meaning the amount of

[4] Fletcher, Harvey, *op. cit.,* p. 67.

energy contained in a unit cube of the medium, or the amount of energy flowing through a unit area in a given time. The intensity of a sinusoidal wave is proportional to the product of the square of the amplitude and the square of the frequency.

Instead of making absolute measurements of the intensity of a sound, it is often more convenient to make a comparison between one sound and another. The *decibel* scale, which is used for these comparisons, will be described later. Other things being constant, variations in intensity are perceived as variations in loudness, but the relationship between intensity and loudness is not simple, and the decibel is not a measure of loudness.

It was pointed out earlier that the motion of the oscillating particle is not to be confused with the wave motion spreading in the medium. Similarly, the velocity of the particle must not be confused with the velocity of the wave. The speed at which sound waves travel depends not on the waves, but on the density and elasticity of the medium. It varies widely in different media. In air at ordinary temperatures, sound travels at about eleven hundred feet per second; in sea water it travels more than four times as fast; and in steel, almost fifteen times as fast as in air. The particle velocity, however, is astonishingly small compared with these speeds, being of the order of only inches per second, even in the most intense sounds. In barely audible sounds, the *maximum* particle velocity may be less than .000001 inch per second.

The length of any wave, that is, the shortest distance (along the direction in which the wave is progressing) between two particles which differ in phase by one cycle, depends on the frequency and the velocity of the wave. Suppose a vibrating source is sending out sound waves in air at a frequency of 100 cycles per second. At the end of one second, the first wave will have reached a point 1100 feet from the source. Between that point and the source there will be 100 waves. Hence, the length of each wave will be 1100 feet divided by 100, or eleven feet. A tone with a

frequency of 100 cycles per second is within the compass of a bass voice, 100 cycles per second being approximately the frequency of the second *G* below middle *C*. The waves of the "high *C*" of the soprano voice, having a frequency of about 1000 cycles per second, have a length of a little more than one foot in air. In other media the wave lengths of these tones would differ according to the velocity of sound in them. In steel, for example, the waves would be roughly 160 feet and 16 feet long, for 100-cycle and 1000-cycle tones, respectively. The wave length is equal to the distance traveled by the wave in one period.

The Transmission of Sound Waves in Air

Sound waves, like other familiar waves (light, radio, and the like), are subject to diffraction, refraction, reflection, absorption, and interference. Acquaintance with the nature of these phenomena will make clear the underlying causes of a number of familiar observations of the behavior of sounds.

Diffraction

We are all aware, for example, that sound does not always travel in a straight line from its source. We hear sounds that originate around a corner from us. Sounds reach us through an open door or window even though there is not a straight-line path from the source to our ears. The apparent bending of waves around the edge of an obstacle is called *diffraction*. Diffraction can be shown in the ripple tank by placing in the path of the ripples an obstructing wall containing an opening. It might be expected that these ripples which strike the opening in the wall would continue in the same direction after passing through the opening. Actually, they spread, as shown in Figure 15. The waves spread out from the small opening as if they originated there. Notice that this spreading effect is more noticeable for the smaller opening. The smaller the opening (compared to the wave length) the more noticeable is the effect of diffraction.

The wave lengths of audible tones in air vary from over fifty feet to less than one inch. Through an opening of a given size, the longer waves are diffracted more readily. Hence, a conversation heard through a half-closed door, or music from your neighbor's radio receiver heard through doors and windows, sounds muffled (lacking in clarity and brilliance) because a larger proportion of the longer (low-frequency) waves reach the ear. The shorter (higher-frequency) waves are effectively filtered out because they are not diffracted as well as those of greater length.

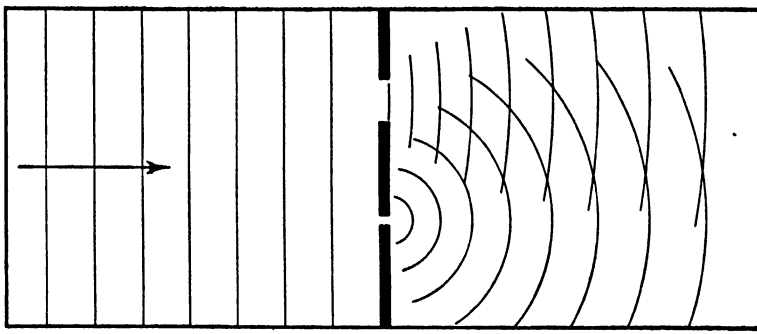


FIG. 15. DIFFRACTION OF RIPPLES IN A TANK.

Diffraction about the head is important in hearing and speaking. A speaker hears his own voice partly by the waves which are diffracted about his head from his mouth opening to his ears, although vibrations reach his ears also by conduction through the tissues of his neck and head, and by reflection from near-by surfaces.

Refraction

We are also familiar with the effects of the refraction of sound waves. *Refraction* is the change in the direction in which a wave travels, due to its traveling at different speeds in different parts of its path. Refraction can be shown in the ripple tank, since ripples travel more slowly in shallower water. Suppose we place a slanting shelf in one end of the tank so that the water is shallower at one side of the tank.

Figure 16 shows how the direction of propagation changes because the velocity is different at different points along the

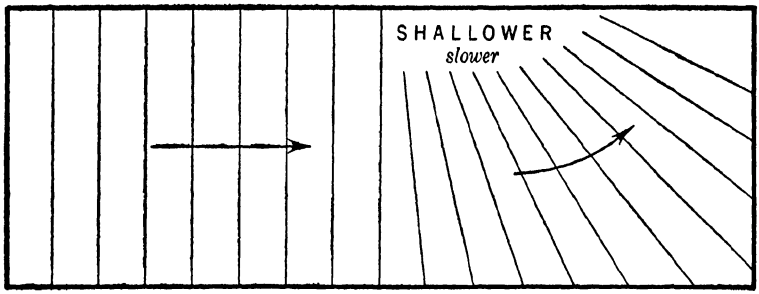
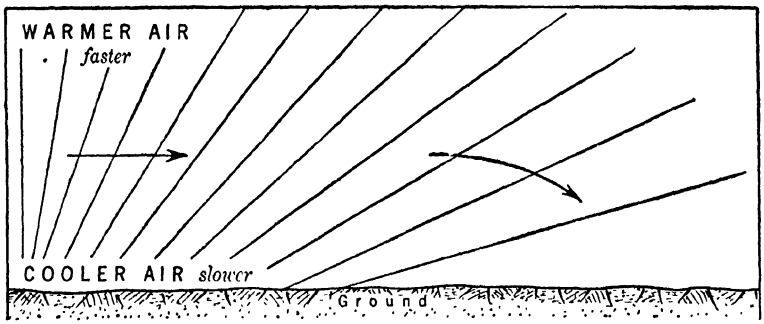


FIG. 16. REFRACTION OF RIPPLES IN A TANK (exaggerated).



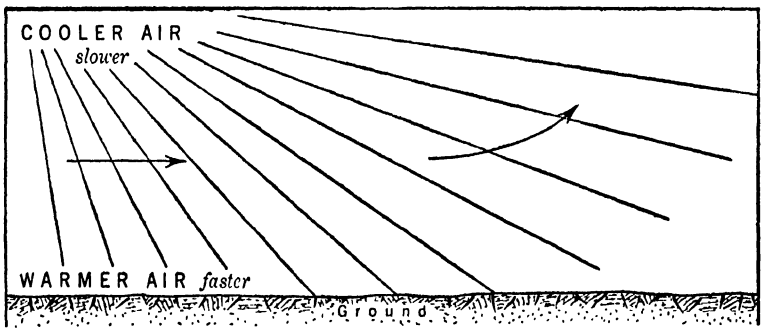


FIG. 17. SOUND WAVES IN AIR. The diagram shows the refraction of sound waves in air, caused by differences of temperature at different heights above the ground.

wave front. The speed of sound in air varies with the temperature, being faster in warmer air. If there is a layer of

cool air near the earth's surface, and warmer air above it, sound waves will be bent downward. The sound energy which would otherwise escape to the upper atmosphere will thus be returned toward the surface of the earth, and a listener at some distance from the source will receive more energy under these conditions. This explains the common observation that "sound travels better over water" and that "sound travels farther at night."

The opposite effect is also possible, for on a hot summer afternoon distant sounds are fainter than usual because the hotter air near the ground bends the waves upward. Refraction is diagrammed in Figure 17. Refraction effects may

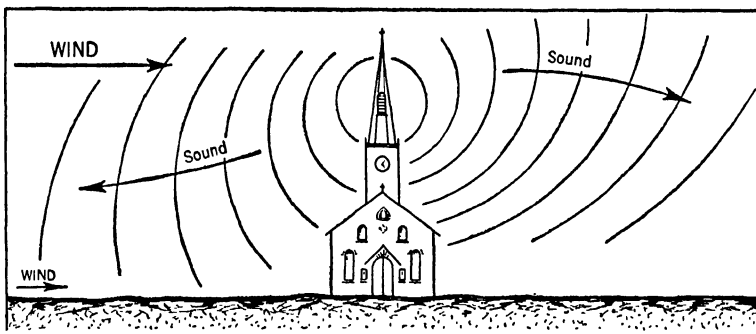


FIG. 18. EFFECT OF THE WIND IN REFRACTING SOUND WAVES IN AIR (exaggerated).

also be noticed when the medium is in motion. You have probably noticed that "sounds carry better with the wind." Figure 18 illustrates the effect of the wind.

Reflection

The most striking demonstration of the *reflection* of sound is to experience the absence of it. In laboratories for the study of acoustics, there are rooms lined with materials which absorb sound waves instead of reflecting them. To visit such a room for the first time is a strange and even uncomfortable experience. The absence of reflections makes a voice sound unnatural, especially to the speaker himself.

A speaker usually hears his own voice, as we have already noted, partly by the reflections from near-by surfaces. The elimination of the reflections in a highly absorbent room demonstrates strikingly how much we owe to them in other surroundings. Not everyone has the opportunity to visit an almost totally absorbent laboratory room, but all of us have noticed the difference between an acoustically "dead" room where heavy carpets, upholstered furniture, and draperies absorb the sound, and a bare, acoustically "live" room with hard, smooth walls and no such absorbent materials.

A single reflection from a distant surface gives a clear image of a sound, called an *echo*. The multiple reflections from several surfaces which are not in the same plane, as in a bare room, give no single image, but diffuse the sound instead. A sound persists longer when walls reflect it back and forth many times with little absorption. This persistence, due to repeated reflections, is called *reverberation*, Reverberation is a highly important factor in the planning of rooms which are to be used for speeches and concerts.

The phenomena of reflection of sound waves are important, numerous, and interesting.[5] We have no space to describe them here, but we must not neglect to mention the important relationship between the wave lengths of sounds and the size of reflecting surfaces. It can be shown in the ripple tank that a reflecting surface which is small compared to the wave length of the ripples will not reflect them effectively. Instead of being reflected, the ripples will be diffracted around the edges of the obstacle and will proceed as if it were not present. Sound waves behave similarly. In order to serve as an effective reflector, a surface must be large compared to the wave lengths of the sound waves which strike it.

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[5] See Stewart, *op. cit.*, Chapters 2, 3, and 5, for explanations of selective reflection, reflection with change of phase, reflection at a change in area of a conduit, reflection at an open end of a pipe, and so forth.

Interference

The effects of interference are common in everyday life, but they are difficult to isolate and point out. We can observe interference most easily in the laboratory. If two tuning forks which differ in frequency by only a few cycles per second are sounded at the same time, the listener will hear a tone periodically rising and falling in intensity. The periodic variations in intensity are called *beats.* Beats are caused by interference between the waves from the two sources.

If two sets of periodic forces (two waves) act in the same direction and in the same phase on one particle of the medium, the resultant displacement of the particle will be

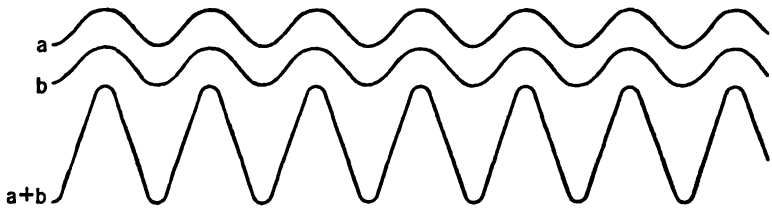

FIG. 19. TWO SIMILAR SINE WAVES IN PHASE AND THEIR COMBINATION.

the sum of the displacements which would result from the waves acting separately. If the two waves are exactly alike, their resultant displacement will be twice as great as that of one of them. Figure 19 shows two coincident sine waves in phase and the resultant *reinforcement* or *constructive interference.*

If the same two waves act in opposite phase at a point, there will be no motion of the medium at that point, because the forces acting on the particle will be opposite and equal. This *cancellation* or *destructive interference* is diagrammed in Figure 20.

Two waves which are not of the same frequency, such as those from the two forks in the demonstration of beats, cannot remain in the same phase relationship. Because they differ in frequency, their phase relationship must constantly

vary, as shown in Figure 21. When the two waves coincide, there is reinforcement; when they are in opposite phase, there is cancellation. The resulting periodic variation in amplitude is heard by the listener as beats. The number of beats per second is equal to the difference between the frequencies of the two beating tones. In Figure 21, there are sixteen waves from one source and twenty from the other,

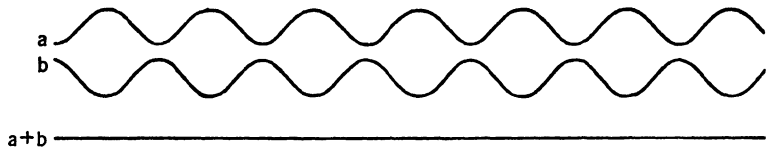

FIG. 20. TWO SIMILAR SINE WAVES IN OPPOSITE PHASE AND THEIR COMBINATION.

making four reinforcements and cancellations. Counting beats is a convenient and quite accurate way of comparing the frequencies of two steady tones. If the frequency of one tone is known, the frequency of the other can be determined readily if the beats between them are slow enough to be counted.

We shall have to refer to interference again when we discuss hearing. In listening to speech or music, for example,

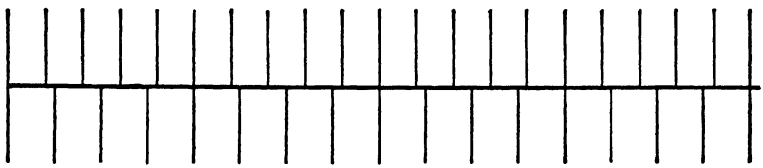

FIG. 21. PRODUCTION OF BEATS. Scheme shows how two waves of different frequencies alternately reinforce and cancel each other, producing beats.

if the same tone reaches the listener's ear over two paths (one path directly from the source, and the other by way of reflection from a wall) which differ in length by one-half a wave length, the two sets of waves will be opposite in phase at the ear and will cancel each other. Such interference effects must necessarily be common, although the conditions are never as simple as in this example.

Noise and Complex Tones

Simple waves, such as those from a vibrating tuning fork, can be described completely in the terms we have so far defined: frequency, amplitude, and wave length. But such tones are ordinarily not found outside the laboratory. The sounds of music and speech, for example, are not simple tones, but *complex tones* and *noises*. A complex wave is produced by a body vibrating in a complex way, as a simple wave is produced by a body vibrating in simple harmonic motion.

A complex tone can be analyzed into a number of pure tones. These component pure tones are called *partial tones*, or simply *partials*. The partial of the lowest frequency in a

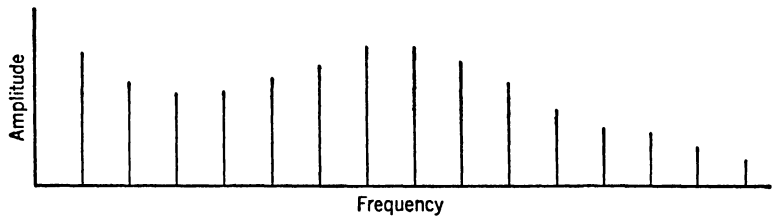

FIG. 22. REPRESENTATION OF THE ACOUSTIC SPECTRUM OF A TONE.

complex tone is called the *fundamental*. Partials having frequencies higher than that of the fundamental are called *overtones*. A partial whose frequency is an integral multiple of the fundamental frequency is called a *harmonic*.

The *form* or *shape* of a complex wave depends on the number of its component simple waves, their relative amplitudes, and their phase relationships. Variations in the number of partials of a complex tone or in their relative intensities produce variations in the sensation called the *timbre* of the tone. The phase relationships between the partials seem to have some significance for the sensation, but the investigation of this subject is far from complete.

The result of the analysis of a complex tone is usually presented in the form of an *acoustic spectrum*, such as that shown in Figure 22. Each partial is represented by a vertical

line, its frequency being shown by its position along the horizontal axis, and its relative intensity by its relative height. The distribution of energy among the components of the tone can be seen at a glance. Vowels and nasal consonants, since they can be prolonged into steady tones in which each wave is like the others, lend themselves to this type of analysis.

Such sounds as the voiceless fricative and plosive consonants are not tones. Their waves are not periodic. Plosive sounds are of very brief duration, consisting of a few irregular waves. A fricative sound can be prolonged, like a vowel or a nasal, but analysis shows that its acoustic spectrum is not composed of a definite number of partials like the spec-

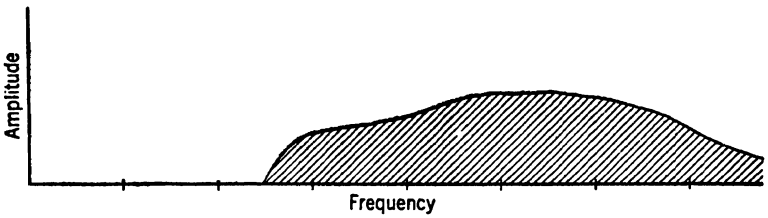

FIG. 23. REPRESENTATION OF THE ACOUSTIC SPECTRUM OF A NOISE.

trum of a periodic wave. It must be considered to be composed of an infinite number of components, and its spectrum is said to be continuous. Such a spectrum is shown in Figure 23. For want of a better word, these sounds are usually termed *noises,* although a noise is also defined as any unwanted sound.

Scales for the Measurement of Sound

Before we can discuss the measurement of the frequency and intensity of speech sounds, it is necessary to describe the scales which are used to express these quantities.

The frequency scale

The conventional *tempered scale* used in music is based on frequency. The fundamental division is the *octave,* a natural interval which produces a unique tonal sensation.

Pythagoras, in the sixth century B.C., knew that a vibrating string half as long as another produces a tone one octave higher, but it was not until more than two thousand years later that Galileo and Mersenne determined that the string half as long vibrates twice as fast as the other. The octave is thus a ratio of one to two in frequency. In the tempered scale, the octave is divided into twelve equal steps, called *half tones* or *semitones.* The ratio between the frequency of one musical sound and another which is a half tone higher on the scale is 1 to 1.059 (the twelfth root of two).

Such a scale, on which the units represent equal ratios instead of equal quantities, is called a *logarithmic scale.* Logarithmic scales are convenient for use in connection with sound for two reasons. First, a logarithmic scale for a given range of values is shorter than a linear scale. The frequency range of audible tones is nearly 20,000 units long in terms of cycles per second, but only ten units long in terms of octaves. The second reason is the familiar Weber-Fechner law, which states that, in general, the magnitude of a sensation is proportional to the logarithm of the stimulus which produces it.

No two octaves or semitone intervals are of the same size in linear units. The highest octave on the piano keyboard, from C_{76} to C_{88}, extends from 2093 cycles per second to 4186 cycles per second.[6] The similar interval at the low end of the keyboard, from C_4 to C_{16}, extends from 32.7 cycles per second to 65.4 cycles per second. The frequency ratio from C to C is the same in each case.

The units on such a scale as this have no absolute value. We cannot say that such and such a tone has a frequency of so many octaves. These intervals are always used to state a comparison. Thus, "high C" (C_{64}) is two octaves above "middle C" (C_{40}). C_4 is three octaves below middle C. The frequency of any tone on the scale can be stated either in terms of cycles per second, or in terms of octaves or half tones above or below a standard reference frequency.

[6] The subscripts are the numbers of the piano keys, beginning at the left end of the keyboard.

The standard reference frequency used for music in this country is, by general agreement, the *A* above middle *C*, with a frequency of 440 cycles per second. In this scale, middle *C* has a frequency of 261.626 cycles per second. For greater simplicity and convenience in computation, physicists since the time of Rudolph Koenig[7] have used the value of 256 cycles per second for middle *C*. In this so-called scientific scale, the values for the *C*'s are 1, 2, 4, 8, 16, 32, 64, 128, 256, 512, 1024, and so on. Many other standards have been used.[8] The important thing to remember is that the frequency of a tone can always be found from its interval with the standard if the frequency of the standard is known.

In singing, the fundamental voice frequency generally coincides with some definite note on the musical scale. In speech, however, the vocal frequency is constantly varying; it does not shift from one note to another in definite steps, as in music. Nevertheless, the intervals of the musical scale furnish a convenient means of stating the range of a voice or the extent of an inflection. The interval in semitones between two frequencies is given by the formula

$$N_{\text{semitones}} = 39.87 \log_{10} \frac{f_1}{f_0},$$

where $N_{\text{semitones}}$ is the number of semitones, and f_1 is the higher and f_0 the lower of the two frequencies.[9]

The musical scale is discussed here not only because it is

[7] Rudolph Koenig (1832-1901), an instrument-maker and pioneer in acoustic research. The tuning forks which he made in his Paris shop were unsurpassed in accuracy.

[8] For those who are interested in music, discussions of other scales and other frequency standards are to be found in the following books:

Jeans, Sir James, *Science and Music*, Macmillan, New York, 1937; Lloyd, Ll. S., *The Musical Ear*, Oxford University Press, New York, 1940; Miller, D. C., *The Science of Musical Sounds*, Macmillan, New York, 1916; Mills, John, *A Fugue in Cycles and Bels*, D. Van Nostrand, New York, 1935; Redfield, John, *Music: A Science and an Art*, Alfred A. Knopf, New York, 1928; and in the references cited by them, chiefly *Sensations of Tone*, by H. L. F. Helmholtz.

[9] We are indebted to Professor Don Lewis of the University of Iowa for this formula, the derivation of which may be found in Cowan's "Pitch and Intensity Characteristics of Stage Speech," *Archives of Speech*, December, 1936, p. 62.

used for expressing measurements of vocal frequencies in speech, but also because it serves to introduce another logarithmic scale, the *decibel* scale, which is less familiar and more frequently misunderstood.

The intensity scale

In the range of audible tones, the highest frequency is about 1000 times as great as the lowest frequency. If a logarithmic scale is a convenience in dealing with this range of a thousand to one, such a scale is a necessity in dealing with the range of intensities which are perceived by the ear. The greatest intensity to which the ear responds without pain may be as much as 1,000,000,000,000 times as great as the least audible intensity of a 1000-cycle tone. The inconvenience of using such large numbers in computation is obvious.

The scale in general use for comparing sound intensities, or acoustic power, was devised by telephone engineers. The basic unit is named the bel, after Alexander Graham Bell. The *bel* is defined as the logarithm to the base ten of the ratio between two amounts of power. The *decibel* (abbreviated db) is one-tenth of a bel. The formula for computing the difference in decibels between two amounts of acoustic power is

$$N_{db} = 10 \log_{10} \frac{P_1}{P_0},$$

where N_{db} is the number of decibels, and P_1 is the greater and P_0 is the smaller amount of power.

The logarithm to the base ten (abbreviated $\log_{10}$) of any number may be defined as the exponent of that power of ten which equals the number. Thus, the logarithm of 10 (10^1) is 1, of 100 (10^2) is 2, of 1000 (10^3) is 3, and so on. The logarithm of 1,000,000,000,000 is 12; hence the distance on the logarithmic scale between the greatest intensity and the least audible intensity of a 1000-cycle tone is 12 bels or 120 db. (For tones of lower or higher frequency, the range is not so great.)

Like the octave and the semitone, the decibel is not an absolute quantity, but a ratio. The ratio between two amounts of power which differ by one decibel can be computed easily. Substituting 1 for N_{db} in the formula gives

$$1 = 10 \log_{10} \frac{P_1}{P_0}.$$

Transposing gives

$$\log_{10} \frac{P_1}{P_0} = \frac{1}{10}.$$

From a table of logarithms, the number whose logarithm is 1/10 is 1.259. Thus the ratio between two amounts of power which differ by one decibel is 1.259 to 1. The larger number exceeds the smaller by .259 or 25.9 per cent. An increase in intensity of one decibel is therefore equivalent to an increase of 25.9 per cent.

The decibel is often described as being equivalent to the least noticeable increase in loudness. This unqualified statement is misleading, for several reasons. In the first place, it refers to the loudness of *pure tones,* which are seldom heard outside the laboratory. In the second place, measurements of the just-perceptible increment in intensity are made under rigidly controlled experimental conditions of listening. In the third place, the value of 1 db for a just-noticeable increase in loudness is an average of a range of values extending from .21 to 9 db,[10] depending on the frequency and the intensity of the test tone. And, finally, the statement implies that the decibel scale is equivalent to a loudness scale based on just-noticeable differences. Intensity is related to loudness, but the relationship is far from simple. The decibel is not a unit of loudness, but a unit on a scale for comparing intensities. For listening under average conditions to the complex sounds of music and speech, a notice-

[10] Fletcher, *op. cit.*, p. 159.

able difference in loudness is more likely to be associated with an intensity difference of several decibels, rather than one.[11]

Doubling the intensity of a sound raises its intensity level by approximately 3 db ($1 \times 1.259 \times 1.259 \times 1.259 = 1.996$). An increase of 10 db is a tenfold increase in power; 20 db represents an increase of 100 times; 30 db, 1000 times; 60 db, 1,000,000 times; and so on. The *intensity level* of a sound is stated as the number of decibels above or below a given reference intensity. The decibel scale may be used to compare the intensities of two sounds, or to compare the intensity of one sound with some value conventionally accepted as standard.

If the average power of conversational speech is taken as the reference point, very loud speech may be described as 20 db above that level, and a faint whisper, 40 db below it.[12]

The zero point on the scale may be any convenient value, but its value must always be understood. Several conventional standards are in common use. One of them, a value which is close to the minimum audible sound pressure, is 0.0002 dyne per square centimeter, or, in terms of power, 10^{-16} watt (stated in electrical units).[13] Formerly, especially in the United States, the conventional zero point for intensity level was one microwatt (one one-millionth of a watt, or 10^{-6} watt).[14] Engineers and technicians in the communications industries have used six milliwatts (0.006 watt) as zero level. No matter what zero point is used, the power of a given sound can be stated as a given number of decibels above or below that level. If the reference level is not clearly understood, such a statement as "an intensity of 70 db" is as meaningless as "a frequency of three octaves."

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[11] Listen, for verification of this statement, to the Bell Telephone Laboratories' phonograph record (BTL-3A and 3B) on which the sounds of music and speech are varied in intensity by measured steps.

[12] Fletcher, *op. cit.*, p. 69.

[13] 10^{-16} is a short way of writing the decimal fraction 0.0000000000000001.

[14] Fletcher, *op. cit.*, p. 154.

Resonance

A physical body, such as a string or rod, a bell or plate, or a mass of air in an enclosed space, will vibrate if it is disturbed or distorted and then left free. When a piano string is struck, it vibrates at a frequency which is governed by such properties as its mass and stiffness. These vibrations, which exist after the driving force has ceased to act, are called *free vibrations.* The frequency at which a body or system vibrates, after the external force which displaced it from its normal position has ceased to act, is called its *natural frequency.*

If the stem of a vibrating tuning fork is pressed against a table top, the vibrations of the fork are transmitted to the table top. The vibrating fork supplies the driving force which maintains the table top in vibration. The table top vibrates at the frequency of the fork, and its vibrations are called *forced vibrations.* Since the table top is in contact with air over its entire surface, it disturbs the air more efficiently than the much smaller prong of the fork and the audible output of the entire vibrating system (fork plus table top) is greater than that of the fork alone. The sounding board of a piano performs a similar function for the vibrating strings.

If the natural frequency of the table top or sounding board should be the same as the frequency of the driving force, the condition called *resonance* would exist. At resonance, the amplitude of vibration is maximum. Even a small oscillatory driving force can build up vibrations of considerable extent if it is applied so as to agree with the oscillations of the driven element of the system.

If a vibrating tuning fork is held over the mouth of a vessel containing air, the air in the vessel will be set into vibration by the succession of sound waves. In this situation also, resonance may occur if the natural frequency of the air mass is the same as the frequency of the sound waves which disturb it. The air surging in and out through the opening of the enclosing vessel will create a new disturbance in the

surrounding air which is more intense than the waves sent out by the fork alone.

When the air is enclosed in a tube, the theory of its action is comparatively simple. It will suffice for our purposes to note only that the length of the tube is the most important factor. If the tube is closed at one end, it will be resonant to waves which are four times as long as the tube. If the tube is open at both ends, it will be resonant to waves which are twice its length.

If the air is enclosed in a space with an opening which is small compared to the cross-section of the cavity, the theory is extremely difficult. The action of the air in such cases may be dealt with by making certain radically simplifying assumptions which lead to results sufficiently accurate for practical purposes. The most important factors in controlling the frequency are: (1) the size of the cavity, (2) the size of the opening, and (3) the length of the neck, if there is one. The resonant frequency of the body of air will be lower for a larger cavity, a smaller opening, or a longer neck; and higher for a smaller cavity, a larger opening, or a shorter neck. The response may also be modified by the rigidity, resilience, and absorbing power of the walls of the cavity. Resonators of this kind are identified with the name of the great German scientist, Helmholtz, who was a pioneer in the study of speech and hearing.

In the human speech mechanism, the situation is further complicated by the fact that the voice is affected not by one resonant cavity, but by several. The action of any single resonant element may be considerably modified when it is coupled with the other elements in such a complex system. Vocal resonance is discussed in Chapter 6.

Questions and Exercises

1. Draw a diagram of a row of particles, showing their positions as waves of longitudinal displacement traverse the row from left to right (see Figure 13). Identify the particles which are at their maximum displacement to the right and to the left; at the maximum velocity toward the right and toward the left.

2. Describe, from your own experience, an acoustic phenomenon which you can now explain in terms of diffraction of the sound waves.

3. Describe an experience in which the refraction of sound waves produced a noticeable effect.

4. It is said that no two people at a concert hear exactly the same music. To what extent is this statement physically true?

5. Calculate the interval in semitones between two tones having frequencies of 440 cycles per second and 554.4 cycles per second.

6. Calculate the wave length of middle *C* (261.6 cycles per second) in air, assuming that the velocity of sound in air is 1120 feet per second.

7. Calculate the increase in intensity level (expressed in decibels) that would result from increasing the number of voices in a chorus from 4 to 40. Assume that every voice contributes the same amount of acoustic power.

8. Why is the method of counting beats not applicable to the measurement of the frequency of vocal tones in speech?

9. What is the difference in the meaning of the term resonance when it is applied to the function of the sounding board of a piano and when it is applied to the function of the air column in a reed instrument, such as the clarinet?

10. Define: *wave, sound wave, cycle, frequency, amplitude, intensity, pure tone, complex tone, overtone, harmonic, diffraction, refraction, reflection, wave length, semitone, octave, decibel, intensity level.*

CHAPTER 8

Speech and Hearing

It is impossible to discuss speaking thoroughly without referring to listening. Normal speaking situations include listeners as well as speakers. Persons born without the sense of hearing do not develop speech normally. It is entirely appropriate, therefore, to devote some space in a book about speech to a discussion of the essential facts and theories about hearing, and the relations of speech and hearing.

The ear is customarily described in three parts: the *outer ear,* the *middle ear,* and the *inner ear.* The outer ear and the middle ear serve to conduct vibrations to the inner ear, which contains the essential organ of hearing. The delicacy of the mechanical parts of the ear, and the sensitiveness of the sensory receptors may be inferred from the fact that in hearing barely audible tones the movements of the conducting mechanism may be less in extent than the wave lengths of visible light, and, at some frequencies, even less than the diameter of a hydrogen molecule![1]

The Outer Ear

The outer ear is made up of the external flap (the *auricle* or *pinna*) of cartilage on the side of the head, and the air-filled channel (the *external acoustic meatus*) through the temporal bone to the middle ear. In many animals the pinna can be moved so as to point toward the source of sound and also to cover the opening of the meatus to shut out stimuli—much as we use the eyelid to shut out visual stimuli. In man these functions are not present, and the pinna is of little, if any, use.

[1] These measurements are by Wilska, cited by Stevens, S. S., and Davis, H., *Hearing,* p. 56. New York: John Wiley & Sons, Inc., 1938.

The Middle Ear

The *tympanic membrane,* separating the outer ear from the cavity of the middle ear, is shaped like a flat cone with its apex pointing inward. It lies obliquely across the end of the external acoustic meatus, completely blocking it. The middle ear cavity (*tympanic cavity*) is irregular in shape and only large enough to contain one or two cubic centi-

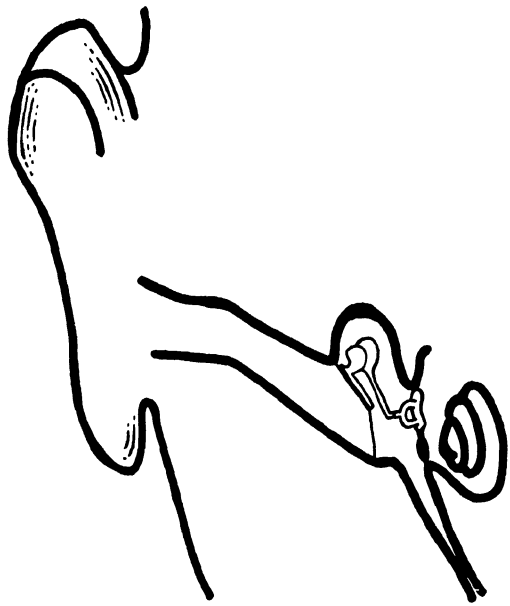

FIG. 24. OUTER, MIDDLE, AND INNER PARTS OF THE EAR.

meters of air. It communicates through the *Eustachian tube* with the pharynx. The air pressure in the tympanic cavity is kept equal to the pressure in the outer air by opening the Eustachian tube. Opening of this tube occurs as an accompaniment of swallowing and yawning. The cavity of the middle ear is bridged by a chain of tiny levers of bone (the *ossicles*) which conduct vibrations from the tympanic membrane across the air space to an opening (the *oval window* or *fenestra ovalis*) in the opposite wall. The oval window opens into the inner ear. The three ossicles are named *malleus*

(the hammer), *incus* (the anvil), and *stapes* (the stirrup). The handle of the hammer lies on the tympanic membrane and is attached to it. The head of the hammer articulates with the anvil, and a long process of the anvil articulates with the head of the stirrup. The foot-plate of the stirrup fits into the oval window and is held there by a ligament. There is a second opening from the tympanic cavity into the inner ear, called the *round window* or *fenestra rotunda;* it is covered with a membrane.

There are two tiny muscles in the middle ear. One, the *tensor tympani,* extends from the wall of the cavity to the handle of the hammer; its contraction pulls the hammer inward and increases the tension of the tympanic membrane. The other, the *stapedius,* extends from the wall of the cavity to the head of the stapes; its contraction, with that of the tensor tympani, tends to prevent the transmission of too powerful vibrations to the inner ear, at the same time holding the ossicles in close contact so that weak vibrations will not be lost.

The structures which we have named thus far serve to conduct vibrations from the outer air to the cavity of the inner ear, which contains the essential organ of hearing. There are two other possible pathways, however, over which vibrations can travel to the inner ear, making three pathways in all. The three possible pathways are (1) from the tympanic membrane over the chain of ossicles to the oval window, (2) from the tympanic membrane through the air in the middle ear cavity to the membrane of the round window, and (3) directly through the bones of the skull to the inner ear, which is enclosed in the temporal bone.

The Inner Ear

The inner ear is a cavity of complex shape in the temporal bone, containing a clear fluid called *perilymph* and enclosing a series of membranous structures. The oval window, containing the foot-plate of the stapes, leads into the part of

the cavity called the *vestibule* of the inner ear. On one side of the vestibule lie the three *semicircular canals,* which have to do with the sense of equilibrium. On the other side of the vestibule, toward the front of the head, is the part of the inner ear concerned with hearing, the *cochlea.*

The cochlea is shaped like a snail shell, consisting of a spiral canal of two and three-quarters turns wrapped around a central bony core called the *modiolus.* The cochlea is about five millimeters high from base to apex, and about nine milli-

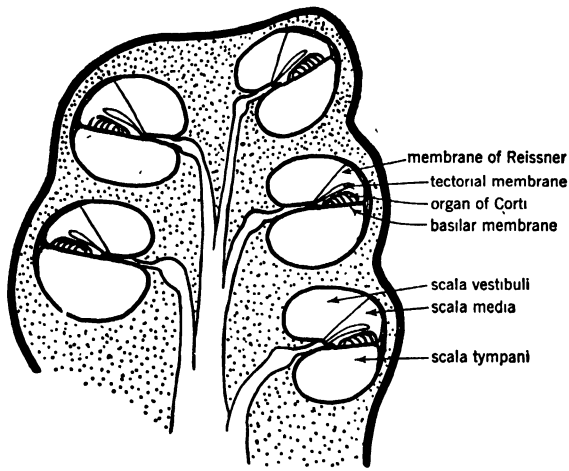

FIG. 25. A CROSS-SECTION OF THE COCHLEA.

meters wide across the base. From the modiolus projects a shelf of bone (the *osseous spiral lamina*) into the spiral canal along its entire length, like a ledge winding upward in a spiral tunnel to the peak of a microscopic mountain. From the edge of this shelf to the opposite wall of the spiral canal is stretched a relatively stout membrance (the *basilar membrane*) which completely divides the spiral canal into two parallel canals, one above the other. A much more delicate membrane (*Reissner's membrane*) extends across the upper canal from the lip of the osseous spiral lamina to the opposite wall at an angle with the basilar membrane, dividing this upper canal in two. These two membranes thus divide the

spiral canal internally from the base to the apex into three parallel canals, called *scalae* (a Latin word meaning "stairs"; we might call them "ramps"). Considering the apex of the cochlea as the top, the uppermost scala, above the membrane of Reissner, is called the *scala vestibuli* because its basal end opens into the vestibule. The scala vestibuli is filled with perilymph. The lowest of the three canals, below the basilar membrane, is called the *scala tympani* because its basal end communicates with the tympanic cavity through the round window membrane. It also is filled with perilymph. Between the scala vestibuli and the scala tympani lies the middle canal, called the *scala media* (or *ductus cochlearis* or *cochlear duct*), bounded above by the membrane of Reissner and below by the basilar membrane. The scala media contains a fluid called *endolymph.* Near the apex of the cochlea, the membrane of Reissner and the basilar membrane meet, and the scala media ends blindly, like the toe of a stocking, leaving an opening which joins the apical ends of the scala vestibuli and the scala tympani. This opening is called the *helicotrema.*

Now, at last, we are ready to describe the essential organ of hearing containing the sensory nerve-endings, which are stimulated by vibrations to send impulses along the auditory nerve to the brain. This aggregation of cells, lying on the basilar membrane in the scala media, is called the *organ of Corti.* It consists of continuous spiral rows of cells extending from the basal end of the scala media to the helicotrema. The organ of Corti is divided into an inner portion and an outer portion by a triangular tunnel. The inner portion (nearest the modiolus) contains, besides supporting cells, an evenly spaced spiral row of some 3500 *inner hair cells*; the outer portion contains three or four rows of *outer hair cells*, numbering about 20,000.[2] The hair cells are so called because they bear delicate hairs projecting into the endolymph toward a curious, transparent structure called the *tectorial*

[2] Stevens and Davis, *op. cit.*, p. 274.

membrane, which projects from the osseous spiral lamina like a canopy over the organ of Corti. The function of the tectorial membrane, and even its existence in the form in which it appears under the microscope, is doubtful.[3] The fibers of the *cochlear branch of the auditory nerve* (*eighth cranial nerve*) emerge from their *spiral ganglion* in the modiolus through the osseous spiral lamina and end in contact with the hair cells. The nerve impulses of hearing originate here in a manner not yet understood, and they are

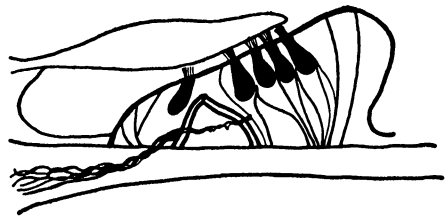

FIG. 26. A CROSS-SECTION OF THE ORGAN OF CORTI.

transmitted along the auditory nerve to the auditory area of the *cerebral cortex* in the temporal lobe of the cerebrum.

To recapitulate, sound waves in the air exert a varying pressure on the tympanic membrane at the inner end of the external acoustic meatus. The tympanic membrane is thus set into forced vibration, and, along with it, the ossicles and the lymph in the vestibule and the scalae vibrate. The vibrations are communicated to the hair cells on the basilar membrane, and impulses are initiated in the auditory nerve endings.

The Study of Hearing

The ear is a difficult object for study. It is impossible to watch it at work, for the most important parts are inaccessibly buried in one of the hardest bones of the body, and, furthermore, the parts are extremely small and delicate, and the extent of their movements is too small and the rapidity too great to be seen or measured directly. The mechanics of

[3] *Ibid.,* p. 273.

the ear must therefore be deduced from knowledge of the general principles of mechanical systems. The work of the ear as a translator of mechanical vibrations into nerve impulses, and ultimately into the sensations of hearing, can be studied by the methods of psychophysics, comparing a listener's reports of his sensations with controlled and measured stimuli. Only a few years ago a wide and fruitful new field of research in hearing was opened by the discovery of certain feeble but measurable electrical concomitants of hearing, referred to as "cochlear microphonics."[4]

Most of the available information about the physiology and psychology of hearing has to do with the response of the ear to pure tones, the simplest and most easily defined stimuli. But beginnings have been made, as we shall see, in the study of the response of the ear to the complex tones and noises of music and speech.

Our vocabulary for referring to the various aspects of auditory sensation is not as satisfactory as we might wish it to be. You have probably observed that terms like "tone" and "noise" have several meanings, and that sounds are just about as difficult to describe as smells. We are forced to use figurative language, similes and comparisons. The terms *pitch, loudness,* and *timbre* refer specifically to primary sensations of sound, but variations in these sensations are difficult to isolate, distinguish, and describe, especially for untrained listeners. Some authorities use additional basic dimensions of auditory sensation, such as *volume, brightness, density,* and *vocality.*

Volume[5] refers to the sense of bigness or spatial extensity of a tone—low-pitched tones seem big; high-pitched tones, small; and loud tones, bigger than weak tones. Brightness and density are terms used to describe the feeling that high-pitched tones seem brighter, sharper, and more compact,

[4] *Ibid.*, Chapter 13.

[5] This is a technical use of the term volume. To most people, including the manufacturers of radio receivers and phonographs, "volume" seems to be synonymous with either intensity or loudness.

while tones of low pitch seem duller, blunter, and more diffuse. Vocality is the resemblance of tones to vowels—low-pitched tones sound like [u] or [ou]; high-pitched tones resemble [i]. Since there is some question whether all of these terms represent basic sensations, we will follow the practice of describing the sensations of hearing in terms of pitch, loudness, timbre, and duration.

Pitch

Pitch may be defined as the aspect of auditory sensation by means of which sounds are located on a continuous scale extending from the lower to the upper limit of tonal perception. The lower and upper limits are usually stated as approximately 20 cycles per second and 20,000 cycles per second, although they are difficult to measure accurately, and although wide differences exist in individuals. Moreover, the upper limit changes with age, becoming progressively lower after the individual passes early maturity.

The pitch of pure tones depends primarily, but not exclusively, on frequency. If the frequency of a pure tone is varied, the pitch will vary; but if the frequency is held constant and the intensity varied over a wide range, the pitch will vary. For tones of very short duration, pitch depends also on the duration of the tone. When a pure tone varies rapidly in frequency, as in the vibrato, its pitch does not correspond to the varying frequency.[6]

The pitch of complex tones depends primarily on the frequency of the fundamental of the tone, but also, especially in speech, on its duration. A curious phenomenon in the pitch of complex tones has been called "the strange case of the missing fundamental." Experiments show that the pitch of a complex tone is not changed by the elimination of the fundamental. Special phonograph records have been made[7] which demonstrate this phenomenon strikingly, but

[6] The reader is referred to the excellent summary by Don Lewis, "Pitch: Its Definition and Physical Determinants," *University of Iowa Studies in the Psychology of Music*, 4, 1936, pp. 346-373.

[7] See RCA-Victor list of *Records For Technical Purposes.*

the telephone and most phonographs and radio receivers also illustrate it to the unwitting listener, since they do not reproduce the fundamentals of the lower tones of music and speech. The apparent pitch of the reproduced music or speech is the same as that of the original, although a difference in timbre is heard. Even in listening directly to the piano, the fundamental frequency of any tone lower than the *G* in the second octave below middle *C* (98 cycles per second) is too weak to be heard. The pitch of such a tone, therefore, corresponds to a vibration which is not heard. The explanation of this phenomenon is that the mechanism of the ear itself supplies a "subjective tone" of the frequency of the missing fundamental.[8]

Loudness

Loudness is defined simply as the magnitude of auditory sensation. Loudness depends primarily on the intensity of the stimulus, but the relationship of loudness to intensity is even less close than that of pitch to frequency. The loudness of a pure tone of constant frequency will vary as the intensity is varied, but if the intensity is held constant and the frequency varied, both pitch and loudness will vary, for the ear is not equally sensitive to all frequencies. The loudness of complex tones, such as those of music and speech, is also affected by the structure or composition of the waves; and duration is important in the determination of the loudness of sounds which are as short as those of speech.

The limits of the intensity range of tones to which the ear responds are shown in the accompanying charts (Figures 27 and 28). The lower curved line represents the *threshold of audibility,* which may be defined as the value of the stimulus which gives rise to a barely perceptible sensation of tone. You will notice that the ear is most sensitive (that is, a smaller intensity will stimulate it) in the range between

[8] The origin of subjective tones, due to the nonlinear transmission characteristic of the ear, is discussed in Stevens and Davis, *op. cit.,* pp. 13-15 and 184-207.

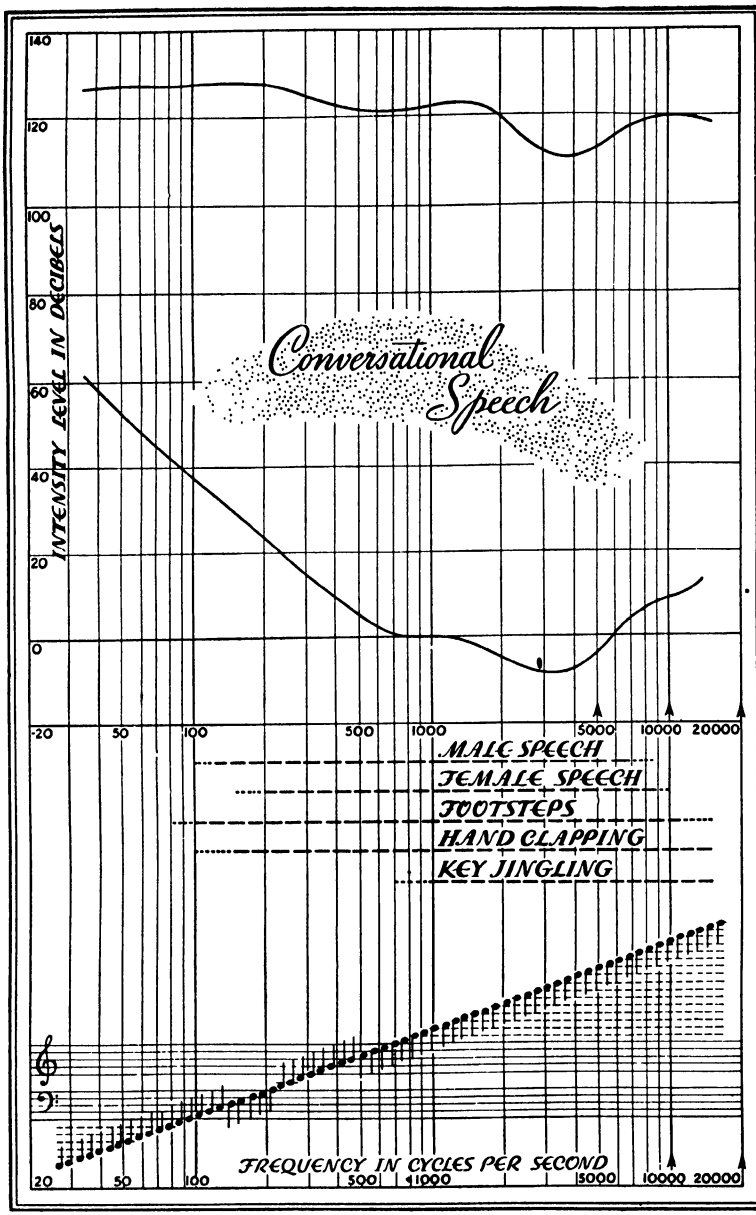

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FIG. 27. FREQUENCY AND INTENSITY RANGES OF SPEECH AND THE LIMITS OF THE RESPONSE OF THE EAR. The stippled area shows the frequency and intensity ranges of the waves which strike the ear in listening to conversational speech at a normal distance.

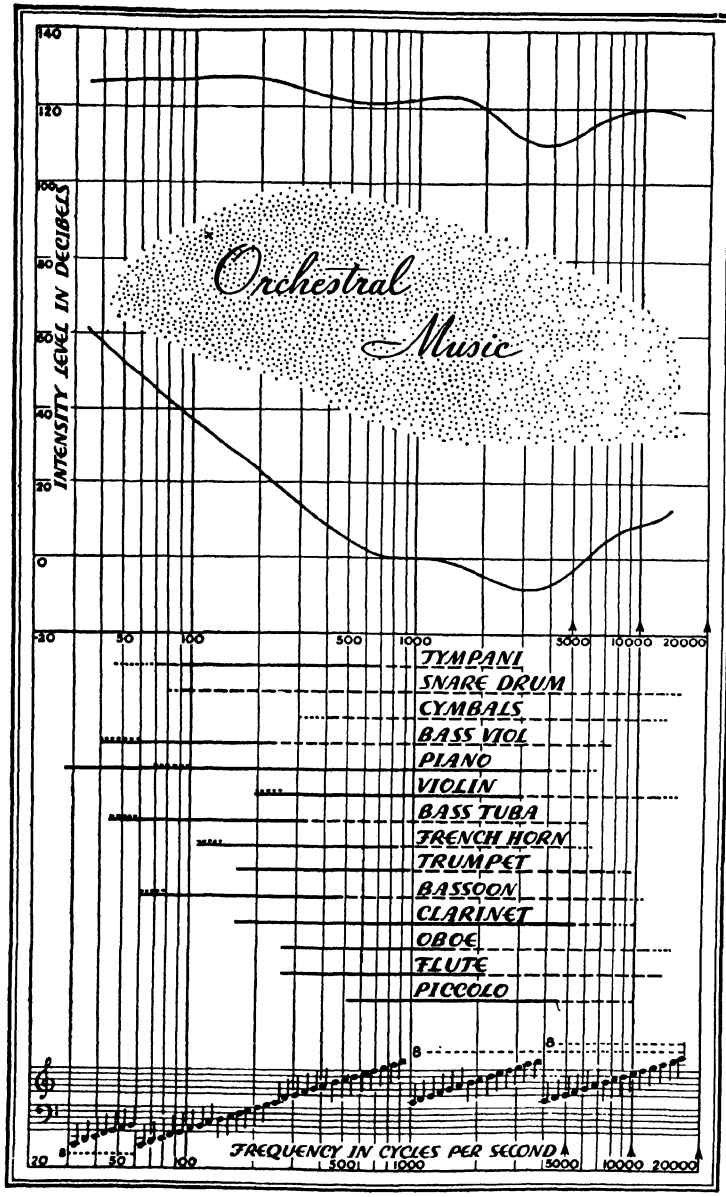

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FIG. 28. FREQUENCY AND INTENSITY RANGES OF MUSIC AND THE LIMITS OF THE RESPONSE OF THE EAR. The intensity level scale is in decibels above and below 10^{-16} watt. (Both charts are from *A Fugue in Cycles and Bels* by John Mills. D. Van Nostrand Co., Inc.)

1000 cycles per second and 6000 cycles per second. It requires about a million times as much intensity (the intensity level must be 60 db higher) to produce a barely audible tone at 40 cycles per second as at 1000 cycles per second. The curved line near the top of the chart represents the *threshold of feeling,* which may be defined as the value of the stimulus which produces a barely perceptible sensation of feeling or pain. At intensities above this magnitude, vibratory stimuli

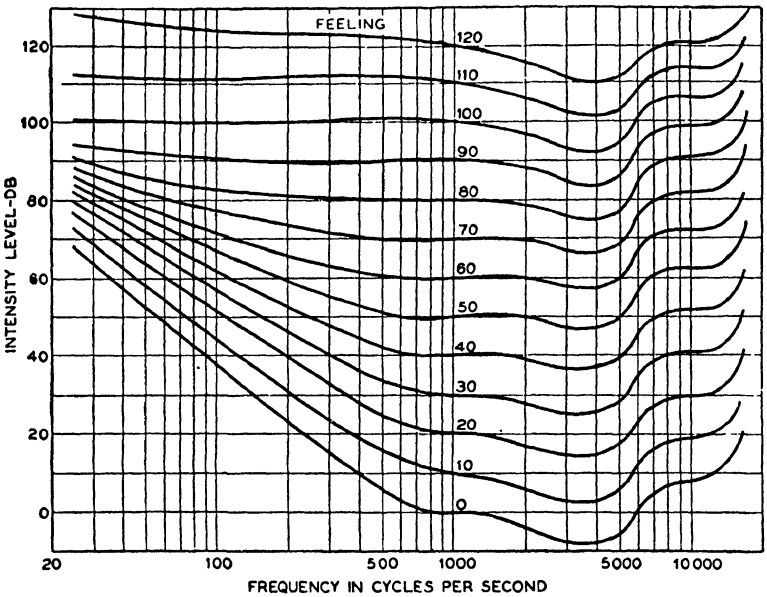

FIG. 29. EQUAL LOUDNESS LEVELS OF PURE TONES. (From Fletcher and Munson, "Loudness, Its Definition, Measurement and Calculation," *Journal of the Acoustical Society of America.*)

give rise to sensations of pressure, pricking, tickling, and burning.

Figure 29 shows that tones of equal loudness may be produced by approximately equal intensities only in the very high intensity range.

Timbre

Timbre has been defined as the attribute of auditory experience which enables the listener to distinguish between

tones which are alike in pitch, loudness, and duration, and yet dissimilar. When you hear an orchestra tuning up, you hear the players sounding notes of the same pitch and perhaps of the same loudness, but you have no difficulty in distinguishing the oboe, the violins, the trumpets, the clarinets and so on, on the basis of their different timbres. Timbre has not yet been studied as thoroughly as pitch and loudness, but it is believed that it is primarily dependent on the number and relative intensity of the components of a complex tone, and also dependent on the total intensity and the frequency. In the light of recent research, the effect of the phase relationships of the components and other factors are also believed to be significant.

In the absence of facts, theories flourish. Many theories have been advanced to account for the sensations of sound perceived by the hearing apparatus, but few have survived the unprecedented progress of the last ten or fifteen years in discovering the facts about hearing. With regard to pitch, the evidence from many experimental and clinical studies seems to indicate fairly clearly that tones of different frequencies stimulate the hair cells on the basilar membrane in different regions—high-frequency tones near the basal end, and low-frequency tones near the apical end of the organ of Corti. The pitch of the tone thus depends not on the frequency of the nerve impulses but on the location of the stimulated nerve endings. It is not now believed possible for the fibers of the basilar membrane to act as mechanical resonators, as Helmholtz suggested many years ago, but in other respects this modern theory resembles his hypothesis. With regard to loudness, one modern view is that it depends on the number of nerve impulses per second reaching the brain, this number being related to the extent of the stimulated portion of the organ of Corti.

Perception of Speech

The problem of finding out how the ear perceives speech sounds is the problem of the perception of complex tones

and noises of short duration and of constantly varying complexity, intensity, and frequency, the physical description of which is not yet entirely complete. The technical difficulties are great, and the field is only beginning to be explored.

Some indication of the kind of information we may expect to find and the need for further research is to be found in a pioneering study by Root of the pitch of speech sounds.[9] This experimenter asked fourteen practiced observers to listen to speeches by well-known orators from phonograph records, and to match the pitch of certain syllables with the tone from a musical instrument. Not all syllables could be assigned a single definite pitch. Of the syllables which were "multipitched" (having no single dominant pitch), some were judged to be pitch glides; others were glides with dominant pitches at one or both ends of the glide; others had two or more salient pitches but no glide; and some had other patterns or no describable pattern of pitch. The agreement among the observers was quite consistent. But when the pitches reported by the observers were compared with the fundamental voice frequencies, as measured by physical methods, it was discovered that the pitch of the speech sounds did not exactly correspond to their frequency; and, indeed, the pitch agreed with the frequency only in a general way. One of the most important factors in determining the agreement between pitch and frequency was found to be duration. Only the sounds of relatively long duration were reported as multipitched, no matter what their frequency pattern was. The extent of pitch glides was never so great as the extent of the corresponding glides of frequency.

Such results as these show clearly how far from the facts is the common notion of the simple correspondence of pitch and frequency. A great deal of research must be done before we shall be able to state accurately and completely the relations between the stimulus and the sensations of speech.

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[9] Root, A. R., "Pitch-Patterns and Tonal Movement in Speech," *Psychological Monographs*, 40, 1930, No. 1, pp. 109-159.

Articulation Testing

The development of the telephone and other instruments for transmitting and reproducing sound has made it necessary to know something about the recognizability of speech sounds and the intelligibility of speech under various conditions of reproduction. This information is applicable also to the problems of impaired hearing. The telephone itself is "deaf" to some sounds, yet it transmits and reproduces speech with satisfactory intelligibility.

The method of testing the adequacy of a transmission system for speech is to have someone pronounce a carefully constructed list of nonsense syllables at the sending end of the system, while observers at the receiving end write down what they hear.[10] The percentage of sounds or syllables correctly received is called the "articulation" of the transmission system. This method has been used to measure the effects of raising and lowering the intensity of speech, the effects of eliminating certain frequencies from speech, the effects of other types of distortion, and of noise and deafness. It is also used to measure the adequacy of aids for the hard of hearing, and the effects on speech of the acoustic conditions in a room. Somewhat similarly, lists of numbers are spoken and whispered from varying distances for a rough test of the acuity of hearing of an individual.

The Effects of Intensity on Recognizability

Experiments using articulation testing methods[11] have shown that nonsense syllables are most accurately recorded when they are heard at a sensation level of 70 db (the *sensation level* of a sound is its intensity expressed in decibels above the threshold of audibility for that sound). This level

[10] Methods and results are discussed in detail in Fletcher's *Speech and Hearing*, Part IV, pp. 255-302; and in Fletcher, H., and Steinberg, J. C., "Articulation Testing Methods," *Bell System Technical Journal*, 8, 1929, pp. 806-854.

[11] Steinberg, J. C., "Effects of Distortion upon the Recognition of Speech Sounds," *Journal of the Acoustical Society of America*, 1, 1929, pp. 121-137.

is approximately that of average conversational speech when it is heard at average distances. Conversational speech at a distance of one-half inch from the ear produces a sensation level of 100 db. You will notice from Figure 30 (from Steinberg) that relatively little effect on articulation is produced by reducing the sensation level to 50 db, but below 50 db the articulation falls off rapidly. The significance of this fact

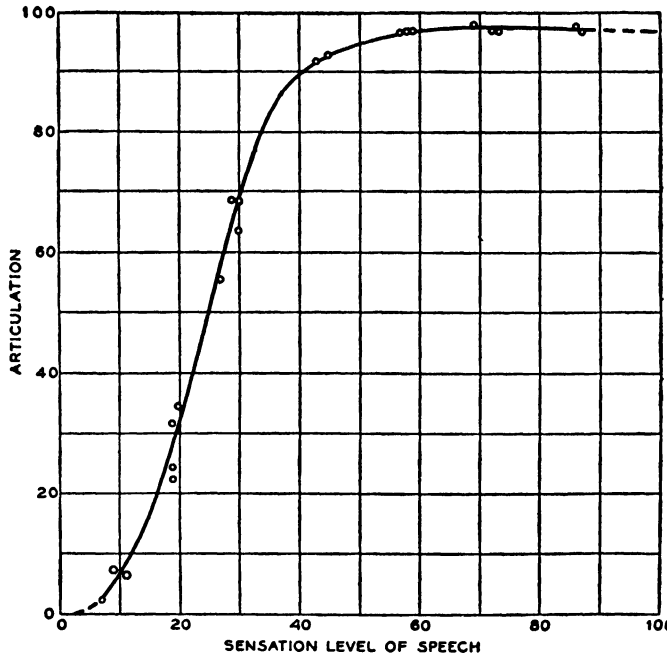

FIG. 30. EFFECT OF SPEECH LEVEL ON SYLLABLE ARTICULATION. (From Steinberg, *Journal of the Acoustical Society of America.*)

to the problem of impaired hearing will appear in a later section of this chapter.

It is important to note that syllable articulation and intelligibility are not the same thing. A listener is often able to grasp the meaning of a sentence even when he does not hear all of the sounds clearly. Experiments show that a listener can understand nine out of ten unrelated sentences even under conditions which make it possible to record correctly

only 30 per cent of nonsense syllables. Figure 31 shows the relation of discrete sentence intelligibility to syllable articulation.

Reducing the average intensity of speech does not affect all of the speech sounds alike. The graph of the threshold of audibility (Figure 27) shows that if the intensity of complex sounds is gradually reduced, the components of very low and

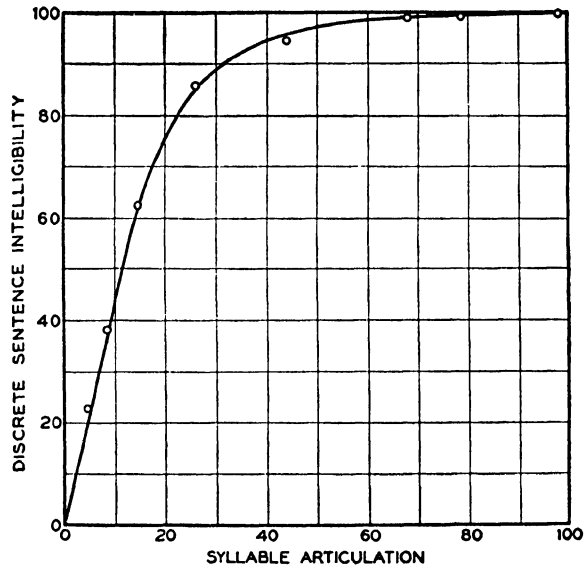

FIG. 31. RELATION OF THE INTELLIGIBILITY OF UNRELATED SENTENCES TO SYLLABLE ARTICULATION. (From Fletcher and Steinberg, "Articulation Testing Methods," *Bell System Technical Journal.*)

very high frequency will become inaudible at a level where sounds in the middle range are still considerably above the threshold. We should expect, therefore, that speech sounds containing important high-frequency components will become unrecognizable at an intensity level which permits recognition of the sounds with their important components in the middle range.

A second factor to be considered in this connection is that not all speech sounds are equally powerful. We should ex-

pect, then, that the weaker sounds will be unrecognizable at a level which still permits the recognition of the stronger sounds. And, further, these two effects will work together, since the graph (Figure 27) shows by the droop of the dotted area marked "conversational speech" that the high-frequency content of speech is weaker than the content at the middle and low frequencies.

Articulation tests show that consonants in general are harder to recognize than vowels, and that the fricative consonants are hardest of all. Five groups of speech sounds have been ranked [12] as follows, according to their recognizability in articulation tests, beginning with the easiest group:

(1) [ɑ, eɪ, i, oʊ, ɔ, u
(2) æ, ɛ, ɪ, ʌ, ʊ, w, j
(3) l, m, n, ŋ, r
(4) b, tʃ, d, g, h, dʒ, k, p, t
(5) f, s, ʃ, θ, ð, v, z, ʒ]

As the level of intensity of speech is reduced from the most favorable level, the fricative consonants become unrecognizable first, then the stop-plosives and affricates, then the nasals, semi-vowels, glides, and "short" vowels, and finally the "long" vowels and diphthongs. It must be remembered that these results were obtained by using meaningless monosyllables made up of an initial consonant, a vowel, and a final consonant. Familiar words and phrases are recognized much more readily than material of this kind, although even in nonsense syllables a consonant may often be recognized by its effect on the vowel immediately before or after it.

An impairment of hearing which has the effect of reducing the sensation level (raising the threshold of audibility) may produce effects similar to those just described. Such an impairment of hearing may result from abnormal conditions in the external acoustic meatus or in the middle ear. These parts of the ear, you will remember, serve to conduct vibra-

[12] Steinberg, *loc. cit.*

tions to the inner ear. When their ability to conduct vibrations is reduced, *conduction deafness* results. Conduction deafness typically reduces the intensity of vibrations at all frequencies by similar amounts; hence its effect is similar to a general reduction of the received intensity of sounds. It has recently been shown that the conduction-deafened ear hears sounds of any audible intensity at less than normal loudness.[13]

Impairment of the functions of the inner ear or of the auditory nerve, called *nerve deafness* or *perception deafness*, shows other effects. Nerve deafness typically affects sounds of high frequency more than those of low frequency. It has recently been shown that, to the nerve-deafened ear, tones approach normal loudness as their intensity is raised above the threshold.[14]

The Effects of the Elimination of Various Frequencies

To an ear which is deaf only to the high-frequency sounds, speech will be perceived as if the high frequencies have been reduced in intensity or eliminated. The effect on the recognizability of speech sounds of eliminating or suppressing various frequencies has been investigated by articulation testing methods.[15]

The electrical transmission system used in these studies was capable of transmitting speech without distortion, but it included electrical filters (circuit networks which suppress the waves above or below a given frequency) so that the experimenter could cut out high or low frequencies at will. The results of articulation tests with these filters in the transmission system are shown in Figure 32.

In this figure the solid curve labeled "Articulation H"

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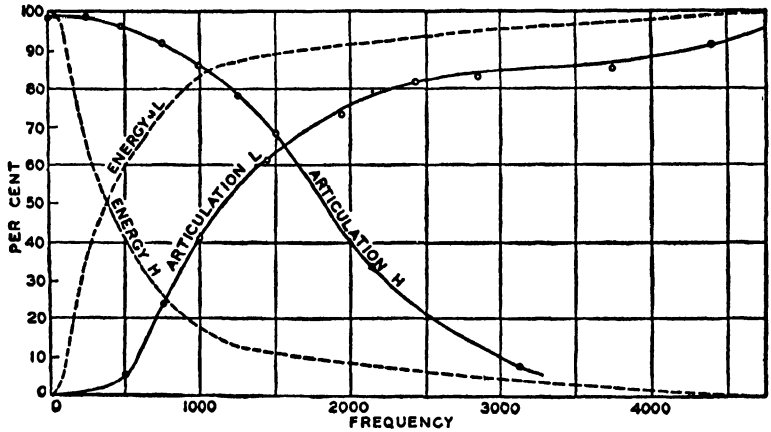
[13] Steinberg, J. C., and Gardner, M. B., "Dependence of Hearing Impairment on Sound Intensity," *Journal of the Acoustical Society of America*, 9, 1937, pp. 11-23.

[14] *Ibid.*

[15] Fletcher, H, "Nature of Speech and Its Interpretation," *Journal of the Franklin Institute*, 193, 1922, p. 6. See also Fletcher's *Speech and Hearing*, pp. 279-286.

shows the effect on syllable articulation of "high-pass" filters, which pass only frequencies above the limits indicated by the curve and eliminate the frequencies below those limits. The dotted line labeled "Energy H" shows the per cent of the speech energy remaining after the low frequencies have been suppressed. To read this graph, notice at what point the articulation and energy curves cut across the vertical lines at various frequencies. For example, the "Articulation H" curve cuts across the 1000-cycle line at a point which corre-



Courtesy of D. Van Nostrand Company, Inc.

FIG. 32. EFFECTS ON ARTICULATION AND ENERGY WHEN VARIOUS PORTIONS OF THE FREQUENCY RANGE ARE ELIMINATED.

sponds to 86 per cent. This means that the elimination of all speech frequencies below 1000 cycles per second reduces the recognition of nonsense syllables to 86 out of 100. The "Energy H" curve cuts across the 1000-cycle line at less than 20 per cent, which means that less than 20 per cent of the total speech energy remains in the frequency band above 1000 cycles per second.

The curve labeled "Articulation L" shows the effect on syllable articulation of "low-pass" filters, which pass only frequencies below the limits indicated by the curve and eliminate the frequencies above those limits. The dotted

line, "Energy L," shows the per cent of the total speech energy remaining after passing through such filters. For example, these curves show that a system which transmits only the frequencies below 1000 cycles per second has a syllable articulation of only 40 per cent, although almost 85 per cent of the total energy remains.

These curves show clearly the relative importance of the high and low frequency content of speech sounds. Most of the energy lies in the fundamental and in the lower harmonics, but the most important frequencies for intelligibility lie in the upper end of the range. Fletcher points out that the loss of frequencies below 500 cycles cuts out 60 per cent of the energy of speech sounds, but reduces the recognition of sounds in nonsense syllables by only 2 per cent, whereas the loss of the frequencies above 1500 cycles cuts out only 10 per cent of the energy, but reduces the articulation by 35 per cent.

Fletcher also gives interesting information about the effect of this kind of frequency distortion on the individual speech sounds. For example, the fricative sounds are affected only slightly by the removal of frequencies below 1500 cycles per second, but are seriously affected by the suppression of the frequencies above 3000 cycles. Suppression of the range above 300 cycles reduces the recognizability of all other sounds by less than 10 per cent. Some sounds are affected by the elimination of frequencies even above 5000 cycles, and [s] is recognized only 50 per cent of the time if frequencies above 4000 cycles are suppressed.

Fidelity in the Reproduction of Speech

It is apparent from the data in Figure 31 that the intelligibility of speech survives an astonishing amount of mistreatment. If it were not so, the telephone and the early crude forms of the phonograph, with their limited frequency response, would have been useless. But we have been talking about intelligibility, and not naturalness of reproduction.

In the last fifteen or twenty years we have all become familiar with sound-reproducing systems in which merely intelligible reproduction of speech is not satisfactory. In the motion-picture theaters and at home with our radio receivers and phonographs, we would like to have, if not perfect, at least convincing naturalness in the reproduced speech of the actors and other speakers. Perfectly faithful reproduction (absolute fidelity) would require that all of the audible frequencies in the original sound should be reproduced at their original intensity levels, and that the reproducing system should not produce any noise or other sound that was not present in the original. Not many of us would enjoy having a perfectly faithful reproduction of a thundering campaign speech or a hundred piece symphony orchestra in our living rooms.

But, disregarding the question of faithful reproduction of the full intensity range, what is the necessary frequency range for convincingly natural reproduction? This question can be answered by the testimony of experienced judges listening to the reproduced sounds under accurately controlled experimental conditions.

The results of such an experiment are available.[16] The expert observers listened repeatedly to the sounds of speech and music through a distortionless transmission system with and without filters, and they recorded their judgment as to the presence of the filters. The results are shown in Figure 33. The frequency range between the circles on each line is the range in which the observers could tell the difference between the filtered and the unfiltered reproduction at least 80 per cent of the time. The lines end at the point where correct judgments amounted to 60 per cent. (If there were no observable difference between the filtered and unfiltered sound, the correct judgments would amount to 50 per cent, by the laws of probability.)

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[16] Snow, W. B., "Audible Frequency Ranges of Music, Speech and Noise." *Journal of the Acoustical Society of America*, 3, 1931, pp. 155-166.

You will notice that the speech of men and women is reproduced to the complete satisfaction of the expert observers when the range from 100 cycles to 10,000 cycles is reproduced. Acceptable reproduction of music requires a wider range. Noise, including the noises that accompany the production of tones on the various musical instruments (clicks

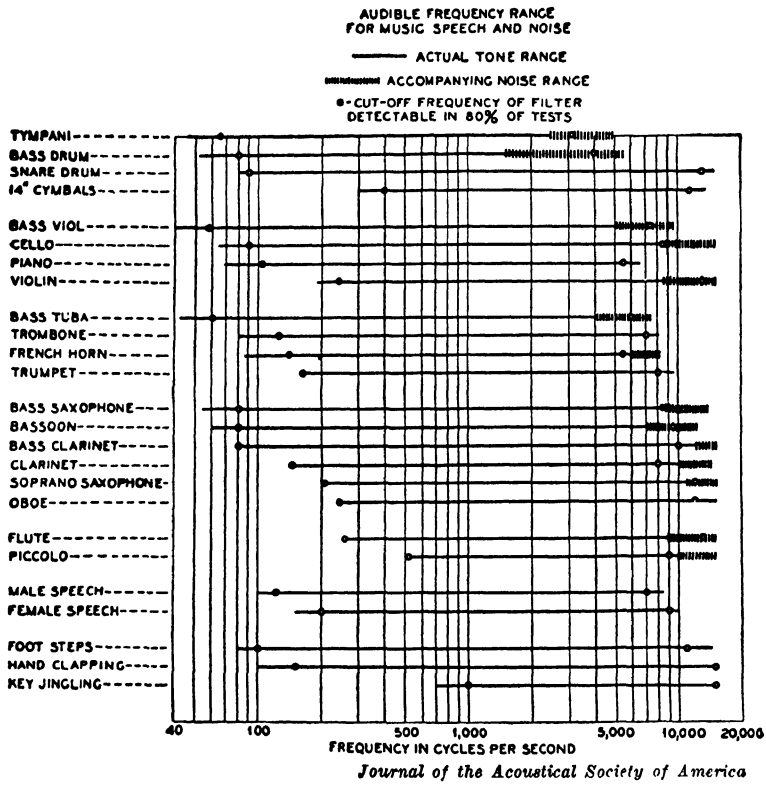

FIG. 33. FREQUENCY RANGES REQUIRED FOR FAITHFUL REPRODUCTION.

from the keys, buzzing from the reeds, noises from bowing and blowing), seems to require reproduction to the upper limit of the audible range, though this study did not include frequencies above 15,000 cycles.

The difference in standards of "acceptable" reproduction between the expert observers in this experiment and the

public at large may be inferred from the fact that the public continues to buy (and enjoy, presumably) phonographs and radio receivers with a uniform response range of only 120-3500 cycles per second.[17] "Reasonably good" reproduction, we are told, requires the range from 100 to 7500 cycles

The Deafened Ear and Speech

Let us see how the available information on intensity and frequency applies to the perception of speech by the deafened ear. Loss of hearing is measured by instruments called *audiometers.* In one widely used form, the audiometer is a calibrated oscillator which supplies pure tones of measured intensity at eight standard frequencies: 64, 128, 256, 512, 1024, 2048, 4096, and 8192 cycles per second. The intensity at which the deafened ear barely hears each of these tones is compared with the threshold values for normal ears, and the difference, stated in decibels, is called the *hearing loss* of the deafened ear.

The information summarized in Figure 32 tells us that all of the most important frequencies for understanding speech are included between 500 and 5000 cycles per second. The audiometer provides four tones for testing hearing within this range: namely, 512, 1024, 2048, and 4096 cycles. It has recently been shown, by comparing audiometric measurements and articulation tests on deafened ears,[18] that the average hearing loss at these four frequencies corresponds closely to the average impairment for the interpretation of speech under laboratory conditions. That is to say, if a person has an average hearing loss of 46 db at 512, 1024, 2048, and 4096 cycles per second, he will require the intensity of speech to be raised approximately 46 db above the

[17] *Broadcast Receivers and Phonographs for Classroom Use,* Report of the Committee on Scientific Aids to Learning, New York, 1939.

[18] Steinberg, John C., and Gardner, Mark B., "On the Auditory Significance of the Term Hearing Loss," *Journal of the Acoustical Society of America,* 11, 1940, pp 270-277.

level required by a normal ear for equally accurate recognition of nonsense syllables.

Laboratory tests do not measure directly the average, everyday experience of untrained listeners, but some information has been published on the relation between an individual's own estimate of his hearing in everyday situations and audiometric measurement of his hearing loss.[19] As a part of a nationwide health survey by the United States Public Health Service, over 9,000 persons were interviewed and given audiometric examinations. In the interview each

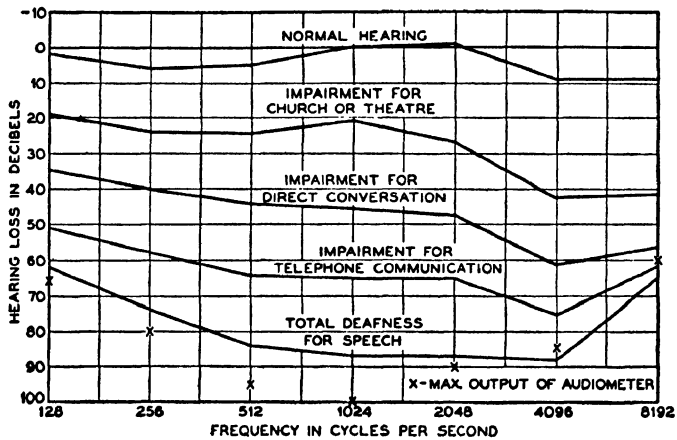

FIG. 34. AVERAGE AUDIOGRAMS FOR GROUPS REPORTING DIFFERENT DEGREES OF HEARING. (From Steinberg and Gardner, *Journal of the Acoustical Society of America.*)

person was asked to classify his hearing ability under one of the following five headings:

1. *Normal Hearing:* no noticeable difficulty.
2. *Partial Deafness, Stage 1:* unable to understand speech in a public place, such as a church or theater, or in a conference among five or six people.
3. *Partial Deafness, Stage 2:* unable to understand speech from a speaker two or three feet away.

[19] Beasley, W. C., *The National Health Survey*, Hearing Studies Series, Bulletin No. 2, United States Public Health Service, Washington, 1938; discussed by Steinberg and Gardner in the article just cited.

4. *Partial Deafness, Stage 3:* unable to understand speech from a telephone.

5. *Total Deafness:* unable to understand speech under any conditions.

The averaged results of the audiometric examinations of these self-classified groups are shown in Figure 34. The group considering themselves normal show an average hearing loss of about 5 db. The group which reported difficulty in understanding speech in public places shows an average hearing loss of about 25 db for the important frequencies of speech. Those who cannot understand conversations at normal distances show an average hearing loss of about 45 db for the speech frequencies. Inability to understand telephone conversation is reported when the average hearing loss is about 65 db in the speech range, and total deafness for speech involves an average hearing loss of about 85 db.

Other Distortions

We have discussed the effects on the perception of speech brought about by changes in its received intensity and by the elimination of various ranges of frequency. There are several other kinds of distortion which affect significantly the naturalness and the intelligibility of speech. Among them we will mention briefly the distortion caused by nonlinear transmission, and then discuss at greater length the effects of the acoustics of rooms.

In discussing the perception of the pitch of complex tones, reference was made to the fact that the transmission system of the ear itself generates vibrations which are not present in the sound waves outside of the ear. Other transmission systems also produce this kind of distortion, introducing into the transmitted sound new tones which were not present in the sound as the system received it. These distortion products have frequencies which correspond to harmonics (integral multiples) of the original tones, and they also have frequencies corresponding to combinations of the original tones, such as their sums and differences. This kind of dis-

tortion, called "harmonic distortion" and "nonlinear distortion," is easily demonstrated. It is present in the output of an overloaded microphone, amplifier, or loud-speaker, and also in the output of a radio receiver which is not tuned accurately to a station. The overloading may be the result of poor design or of inexpert operation.

One of the effects of slight harmonic distortion may be to increase the relative intensity of the weaker sounds. The increased intensity does not always improve their clarity, however, and the hissing sounds of speech, especially, are likely to become spluttering sounds. Experience shows that harmonic distortion of more than one per cent can be detected in sounds of ordinary intensity; that is, the distortion products are detectable if they have a combined intensity as great as one per cent of the intensity of the original sound. Larger amounts of nonlinear distortion make a rasping, unintelligible hash of music and speech. You have undoubtedly heard such sounds from the automobile "sound trucks" sometimes used for advertising purposes, or from homemade phonograph recordings, or from your neighbor's radio receiver with its volume control set too high.

Room Acoustics and Speech Perception

The effects of the acoustic conditions in rooms on the enjoyment and intelligibility of music and speech are of great importance to all of us, either as speakers or as listeners. Some of the most important factors in the acoustics of rooms are reverberation, noise, echoes and interfering reflections, and resonance. Good acoustics for music can best be described qualitatively in terms of the critical listener's satisfaction, but good acoustics for speech can be expressed quantitatively in terms of the results of articulation tests, considering the air in the room as the transmission system to be tested. Experiments of this kind have shown[20] that the

[20] Knudsen, Vern O., "The Hearing of Speech in Auditoriums," *Journal of the Acoustical Society of America*, 1, 1929, pp. 56-82. See also Knudsen's *Architectural Acoustics*. New York: John Wiley & Sons, Inc., 1932.

percentage of syllable articulation for an auditorium can be predicted approximately from a knowledge of four factors: (1) the sensation level of the speech, (2) the reverberation time of the room, (3) the level of extraneous noise in the room, and (4) the effects of the shape of the room.

Under ideal conditions, with no noise and no reduction in the recognizability of nonsense syllables because of excessive reverberation or echoes, and with speech received at the optimum level (see Figure 30), the syllable articulation is found to be about 96 per cent. One hundred per cent articulation is never achieved, because mistakes occur in recognizing certain consonant sounds by ear alone, even under ideal conditions. Figure 31 shows that fairly satisfactory intelligibility exists even when syllable articulation is as low as 75 per cent, while 85 per cent can be considered excellent. Anything below 65 per cent is considered intolerable.

We have already discussed the relation of the received intensity of speech to syllable articulation. Let us examine briefly the other three factors: shape of the room, noise level, and reverberation.

The shape of the room

In a small room the shape is not an important factor in reducing the percentage of articulation, but in a large auditorium there may be two conditions which will give trouble. The first is a curved wall or ceiling which reflects the sound waves from the speaker in such a way as to focus them in one place, thus producing a concentration of sound at that place and a comparative scarcity of sound in other places. The second is the existence of an excessively long path from the source of sound to a reflecting surface and back to the listener.

A listener in a room receives sound directly from the speaker and also by reflection from the walls and other surfaces in the room. If the direct sound and the reflected sound reach the listener simultaneously or almost simultaneously the result is a beneficial reinforcement which increases the

received intensity of the sound. This condition exists in small rooms where the reflecting surfaces are so near the listener that the reflected sound reaches his ear with no appreciable delay after the direct sound. A familiar example of this condition is to be found in the ordinary bathroom, a small room with highly reflecting walls in which even an ordinary male voice sounds flatteringly robust, especially to its owner.[21]

In an auditorium, however, the walls are farther away from the listener. The sound coming from the reflecting surfaces has to travel over a longer path than the direct path from the source to the listener. If the difference in the lengths of these two paths is great enough to cause an appreciable delay, the listener will hear the reflected sound separately, as an echo. Unless the reflected sound is very faint in comparison to the directly received sound, the result will be a blurring which makes the sounds of speech very difficult to interpret. The echo of one sound may mask the succeeding sounds, and intelligibility will suffer greatly. Under such conditions, which exist when the auditorium is long and narrow or when it has one or more long branches or arms, a speaker can sometimes be understood better if he adopts a very deliberate rate of speaking.

Noise

When an auditorium is in a noisy location, or when there is a noisy audience in it, there is little that a speaker can do to overcome the effect of the noise except to raise the level of his speech, and, of course, there is a limit beyond which he cannot raise his voice without straining it. Noise produces a deafening or masking effect on other sounds. The severity of the masking effect depends on the intensity of the noise compared with the intensity of the speech or other sound.

[21] When the wave lengths of the sounds are not small compared to the dimensions of the room, the room may be actually resonant to the waves. Low-frequency waves are relatively long waves and are more likely to meet this condition in bathrooms of ordinary size; hence, bathroom acoustics are likely to be more favorable to basses and baritones than to sopranos.

The experimental results show that even a slight amount of noise produces an appreciable impairment of articulation, but that satisfactory articulation exists when the ratio of noise level to speech level is less than $\frac{1}{10}$; that is, syllable articulation will be over 80 per cent for speech at a level of 60 db above threshold in the presence of noise at a level of 25 db above threshold. A noise level of 25 db is not unusually high. In order to preserve a favorable ratio of speech level to noise level in all parts of a large auditorium, it is usually necessary to provide a sound-reinforcing system ("public address system") consisting of microphone, amplifier, and loud-speakers.

Reverberation

The most important single factor in room acoustics is reverberation, which is defined as the persistence of sound due to repeated reflections. Reverberation is measured in terms of the length of time it persists. A pure tone with a frequency of 512 cycles per second (unless otherwise stated) is produced in the room to be measured, and it is prolonged until the average intensity (sound energy density) reaches a steady state. The time required for the intensity to decrease to one millionth of its steady-state value after the source is stopped is called the *reverberation time* of the room for that frequency. The reverberation time is approximately the time it takes for music or speech of moderate loudness (60 db above threshold) to die away to inaudibility.

The reverberation time of a room depends upon the size of the room and the amount of absorptive material in the room. It is assumed that the sound is partly reflected and partly absorbed when it strikes a boundary of the room, and that it continues to be reflected from boundary to boundary, giving up a certain fraction of its energy at each successive reflection until all of its energy has been absorbed. The time required for the energy to be reduced a specified amount depends on the number of reflections per second and the

fraction of energy absorbed at each reflection. In a large room the sound has farther to travel from one surface to another than is the case in a small room; hence, there are fewer reflections per second in the large room, and its reverberation time is longer. If the material of the boundaries absorbs only a small fraction of the energy at each reflection, the reverberation time will be longer than in a room of the same size with boundaries which absorb a larger percentage of the energy at each reflection. The reverberation time of a room can be modified and controlled by placing materials of different absorbing power on the reflecting surfaces.

The effect of excessively long reverberation time may be observed in such a place as an indoor swimming pool, or an old-fashioned restaurant with walls of tile and glass mirrors. In such a room sounds are prolonged so that they overlap and produce an indistinct blur, like the sound of a piano being played with the loud pedal held down. In rooms of very short reverberation time, the lack of reflections from the walls makes a speaker's voice seem faint and thin. It is difficult to speak or sing in such a "dead" room—the effect is the opposite of "bathroom acoustics." Some materials absorb high-frequency sounds more readily than those of low frequency. In a room which is "dead" to high frequencies, speech and music sound "boomy"; the tones lose brightness and seem to be muffled; and the effect is oppressive and disagreeable. Between these extreme conditions of liveness and deadness there is a range of satisfactory and comfortable conditions.

The results of articulation tests in auditoriums with reverberation times of from less than one second to more than eight seconds, show that the percentage of articulation drops almost uniformly, about 6 per cent for each additional second of reverberation time from one second up to six seconds. Above six seconds the articulation decreases more slowly with increased reverberation time, but at six seconds it is already far below the lowest tolerable percentage.

Optimal reverberation time

At first glance, it might seem that to keep the articulation high would require only the addition of enough absorptive material to reduce the time of reverberation to one second or less. But the addition of absorption to a room reduces the average intensity of sound in the room as well as the time of reverberation, and we have already seen that the intensity of speech is a very important factor in intelligibility. Obviously, there is no advantage in adding absorption beyond the point at which the improvement in articulation produced by reduced reverberation is offset by the loss in articulation caused by the reduced sensation level of the speech.

For speech of a given intensity in an auditorium of a given size, therefore, there is a reverberation time which cannot be improved—the *optimal reverberation time,* at which the percentage of articulation is at the maximum. The optimal reverberation time for speech increases as the size of the auditorium increases, being as short as .75 sec. for a room of small volume (12,000 cu. ft.), and as long as 1.25 sec. for a very large auditorium (1,000,000 cu. ft). But even at the optimal time of reverberation, the maximum percentage of articulation becomes lower and lower as the size of the auditorium increases. The average public speaker cannot be understood satisfactorily in the largest auditoriums unless the power of his speech is amplified by means of a sound-reinforcing system. Such systems are said to be imperatively needed in auditoriums larger than 400,000 cu. ft. and desirable in rooms larger than 100,000 cu. ft.

In classrooms of ordinary size (a classroom 20 by 25 by 12 ft. has a volume of 6,000 cu. ft.), reverberation is usually not a problem because the room's occupants and their clothing absorb sufficient sound. In lecture halls as large as 100,000 cu. ft. (that is, 50 by 80 by 25 ft.) without acoustic treatment, listening conditions are at their best only when a capacity audience is present, and conditions become intolerable when only a small audience is present. But, as Knudsen

shows, with appropriate acoustic treatment (that is, proper choice of materials for the walls and ceiling) such a room can be made to have highly satisfactory hearing conditions for either large or small audiences.

It should be mentioned that the optimal reverberation time is somewhat longer for music than for speech, because the tones of music are of greater duration than those of speech and may be enhanced in loudness and sonority by reverberation. In auditoriums which are to be used for both music and speech, it is customary to plan for a time of reverberation which is a compromise between the optimum value for speech and the optimum value for music. It is generally agreed that a studio for broadcasting or for phonograph recording should have a time of reverberation about two-thirds as long as that of a room for listening to music or speech. When a sound-reinforcing system is to be used regularly in an auditorium, the reverberation time of the room is kept low, since reverberation is not needed to keep the loudness up to the optimum level.

What Can the Speaker Do?

We have discussed the four factors which affect the hearing of speech in auditoriums: namely, the shape of the room, the intensity of the speech, the presence of noise, and the reverberation time of the room. What can the speaker himself do to overcome poor acoustic conditions when he is required to speak in a room which has echoes because of its long, narrow shape; or is excessively reverberant; or is noisy because of its proximity to bowling alleys or street traffic; or is too large for the normal power of his voice?

If the conditions are not hopeless, the public speaker can do a great deal to minimize the effects of poor acoustic conditions by taking pains to speak slowly, with the full power of his voice, and with special care to enunciate the consonant sounds distinctly, especially the final consonants. A slow rate of speech will permit the echo or reverberation of one

syllable to die away to some extent before the next is produced, and it will increase the effective power of the voice by the building up of the prolonged tones in the speaker's own vocal resonators. Distinctness (or even emphasis) of the consonants will improve intelligibility because it will help to counteract the tendency for consonants to be unrecognizable at low levels of intensity, and because it will counteract the tendency for a consonant to be masked by the reverberation of the vowel which precedes it. In Knudsen's experiments more than half of the failures to recognize consonants involved the final consonants of the nonsense syllables. In Fletcher's experiments more than half of the errors in the recognition of fundamental speech sounds (both consonants and vowels) were committed on [v], [f], [ð], and [θ]. Knudsen adds to this list of the least recognizable sounds the consonants [ŋ] and [d], and comments that public speakers and teachers of speaking "could make a substantial contribution to the problem of hearing in auditoriums if they would utilize this information."[22]

Of course, teachers of speech have been recommending distinct enunciation for centuries. A striking modern statement of this advice is to be found in one of George Bernard Shaw's letters to Ellen Terry as a young actress, in which he tells her that an actress should be able "to drive a nail to the head with one touch of a consonant."

Questions and Exercises

1. Why does the quality of the music change as a band approaches a listener and marches past him?

2. Describe the effect of plugging both your ears with your fingers while listening to speech. What sounds are heard most clearly? What sounds, if any, become inaudible? Why?

3. Distinguish between loudness and volume.

4. If a person is deaf to high-frequency sounds but not to low-frequency sounds, will he understand you better when you shout at him?

[22] Knudsen, *op. cit.*, p. 81.

5. What is the effect on *intelligibility* of eliminating from speech all frequencies above 3000 cycles per second and below 300 cycles per second?

6. What is the effect on the timbre of a musical or vocal tone of reproducing it at an intensity higher than the original? Lower than the original intensity?

7. Describe, from your own experience as a listener or as a speaker, some effects of poor or unusual acoustic conditions in an auditorium, and suggest an explanation.

8. Outline the assumptions underlying the concept of *reverberation time.*

9. Under what conditions may a speaker be justified in assuming an artificial, overprecise style of speaking which would be inappropriate in conversation? Explain fully.

10. Explain *optimal reverberation time.*

11. Draw from memory a diagram or series of diagrams showing the important structures of the ear.

12. Define *pitch, loudness,* and *timbre,* and discuss their relationships to the *frequency, intensity,* and *composition* of sound waves.

CHAPTER 9

Voice Improvement

It is curious that a people so concerned about the improvement of personal appearance as we are—at least, judged by the amount of our annual expenditure for clothes, cosmetics, and various other forms of adornment—should be so little concerned with the improvement of our voices. We are careful about the clothing we wear, about the appearance of our hair, our faces, and our hands, yet many of us tolerate voices which are, to put it mildly, not attractive. We do not seem to realize that the voice is of considerable importance to us.

One reason for its importance lies in the fact that our voice tells a good deal about us. It may reveal something about our physical condition: that we are tired or sleepy, alert and energetic, tense or relaxed; that we have adenoids; that we have been shouting or smoking too much; or that we are sick or well. It may reveal important characteristics of our personalities: that we are aggressive or submissive, introvert or extrovert; that we have or that we lack self-confidence. It may be indicative of our moods, showing when we are happy or sad, excited or depressed. It may indicate quite clearly our attitude toward the situation in which we find ourselves, even though we may desire to conceal that attitude. Our voice may show that we are interested or bored, that we are surprised or disappointed, that we are embarrassed, angry, pleased, hostile, sarcastic, or incredulous.

Voice is important not only because of what it reveals about us but also because of the effect it has on others. Voice is essentially a medium of communication—it carries a speaker's words to his listeners. If the voice cannot be heard, the act of speech is incomplete. If it is abnormal, the attention of the listener may be diverted from what is being said

to the unusual characteristics of the voice. If it is pleasant, the listener may wish to hear more; if it is unpleasant, he may wish to escape. Our voices do, then, to some extent at least, determine the sort of hearing that we get from others.

Because voice is so intimately related to the physical and psychological states of the individual, an adequate program of voice training must include more than vocal exercises. No matter how skillful the individual may become in the manipulation of his voice, his voice is still a part of his total behavior and will be likely to respond effectively to a given situation *only to the extent to which the individual himself responds.*

Development of Responsiveness

The first and most fundamental step in voice training is, consequently, development of the ability to respond more intensely to what you wish to say. Only when you understand your material thoroughly, think and speak vividly, and experience an adequate emotional response to the situation will your voice be capable of responding with maximum effectiveness. Listen to the speech of those about you—and to your own speech—and notice the change that comes in the voice when the speaker is interested in, and enthusiastic about, the topic of conversation. His interest and enthusiasm are reflected in his voice. The monotonous voice becomes animated, the dull voice colorful.

Responsiveness cannot be developed simply through exercise. It demands of the student a strong desire to become a more vivid and compelling speaker, reader, or actor. It demands resolution to devote time and energy and intelligence to the achievement of that objective. Ultimately it demands development of the ability to live more intensively —to see more clearly, to feel more deeply, and to respond more freely. The achievement of such an objective very obviously exceeds the scope of the present work. There are, however, various ways of making a beginning that may be suggested.

Exercises to Develop Responsiveness

1. Select a subject about which you feel quite strongly, a subject which you feel is important and concerning which you have very positive convictions. Assume that you are to deliver a speech on this subject to a hostile audience and that it is highly important that you change their opinion on the subject. Analyze their possible objections to your point of view; assemble the most convincing evidence you can find in support of your position. Prepare and deliver a three to five minute speech.

2. Find some passage in literature which you like and to which you feel a strong emotional response. This passage may be either poetry or prose. Study it until you feel that you understand it thoroughly. Then read it to the class with the purpose in mind of making them respond to the selection as strongly as you do. For the present purpose, the literary quality of the material is relatively unimportant. The important thing is that it be something you like, understand, and respond to with some degree of feeling.

3. Develop the practice of frequently reading aloud selections which arouse an emotional response in you. If you seldom find passages to which you respond, the amount of your reading should be increased, your reading range should be widened, or you should seek help in increasing your appreciation of prose and poetry. Your instructor will be able to suggest anthologies and other sources which may enable you to find the types of material which will be most adequate for you. If you can develop the habit of reading aloud to yourself or to someone else from material that you enjoy, even if you do it only occasionally, your ability to appreciate and to express will improve noticeably.[1]

Development of Breath Control

The second step in voice training is the development of breath. control. The human voice is a wind instrument which produces tone when the pressure of the outgoing air sets the vocal cords (or folds) into vibration. The breath serves the same function in the production of voice that it

[1] If this latter suggestion is to be made an assignment, an effort must be made to prevent its becoming routine. The student might be required to submit the titles read and occasionally one or more of these might be selected by the instructor for presentation to the class.

serves in the production of tone from a bugle or saxophone. Good breath control is essential to good tone production.

The breathing required for tone production is quite different from the breathing done to meet the physiological needs of the body. Physiological breathing occurs rhythmically at a rate of fourteen to twenty times per minute. The time required for inspiration is approximately equal to the time required for expiration. On the other hand, the rhythm of breathing for speech is not regular. It is determined by the phrasing of the ideas that are being spoken. The inspiration is accomplished rapidly; the expiration prolonged.

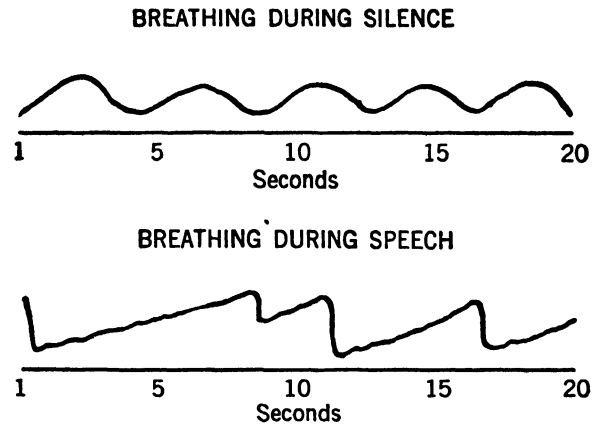

FIG. 35. BREATHING CURVES DURING SILENCE AND DURING SPEECH. Downstrokes represent inspiration; upstrokes represent expiration.

The fact that the upper and lower parts of the thorax may be used more or less independently in breathing has led to a long-continued controversy over whether "upper-chest" or "abdominal" breathing should be used in speech. In the early part of the nineteenth century, many of the French instructors of voice taught "upper-chest" breathing. This method was vigorously attacked by a French physician, Dr. Mandl, in an article published in 1855. He advocated "abdominal" breathing, which method was taken up by

many of the leading teachers in England and carried to such an extreme that:

> . . . in schools of singing most strange devices were resorted to for the purpose of fixing the ribs and compelling pure abdominal breathing; thus the pupils were made to sing while lying down on mattresses, sometimes with weights more or less heavy placed on the sternal regions. Masters were even said to make a practice of seating themselves familiarly upon the chests of their pupils. In schools were to be seen gallows with thongs and rings for binding the upper half of the body, orthopaedic apparatus, rigid corsets, and a kind of pillory, which enclosed the frame and fixed the ribs." [2]

The absurdity of such training led to an attack on the "abdominal" method, and the controversy still persists. Recent research demonstrates that good tone can be produced with either method. Many modern teachers of voice advocate use of both upper and lower thoracic activity. The exercises suggested in this chapter are designed to develop both upper and lower thoracic activity, with emphasis on the use of the lower thorax, and particularly the diaphragm, in control of expiration.

While there are exceptional cases in which inhalation cannot be accomplished quickly or a sufficient amount of air is not inhaled, the quantity of air available for tone production is usually adequate. The principal problem in the development of good breath control lies in learning to control the outgoing breath stream. There are two ways in which this outflow of air may be controlled: by the gradual relaxation of the muscles of inspiration, or by the gradual contraction of the muscles of expiration. In quiet speech, relaxation of the muscles of inspiration will produce sufficient air pressure, but where loud or sustained tones are required, as in a large room, in shouting, or in singing, the expiratory muscles are called into play. Control over these activities can be developed through the following exercises. (It must be remem-

[2] Quoted in Shaw, W. W., *The Lost Vocal Art and Its Restoration*, pp. 89-90. Philadelphia: J. B. Lippincott Company, 1914.

bered that control over the muscles involved in breathing is as difficult to acquire as is control over other muscles. Practice must be regular and persistent if improvement is to be expected. Professional singers, actors, and speakers often spend months in the development of breath control and regularly continue the practice of breathing exercises.)

Exercises in Breath Control

1. Stand erect with the hands on the waist, halfway between the end of the breastbone and the lowest rib. Inhale for five seconds, then exhale smoothly for five seconds. Continue this exercise for at least two minutes. Be sure that the lower as well as the upper part of the chest is expanded on inhalation. You should feel the torso expanding against your hands as you inhale, and relaxing as you exhale. The purpose of this exercise is not to take in as large a quantity of air as possible, but to take in and release a normal quantity of air smoothly.

2. Repeat the above exercise, but prolong the expiration for ten seconds. Continue for three minutes. Rest if you become dizzy.

3. Stand erect, with the hands on the waist as in the previous exercise. Inhale easily, then count to five slowly on exhalation, using as little breath as possible. Release the remaining air. Repeat ten times.

4. Repeat Exercise 3, gradually increasing the count until you can reach twenty easily without counting rapidly or exhausting the breath. The expiration must never be forced.

5. Repeat Exercise 1, but hum softly on expiration. Be sure that the throat and jaw are relaxed. At first the tone will be irregular because the breathing muscles are moving jerkily. Work for a smooth easy tone. Continue for two minutes.

6. Repeat Exercise 2, humming softly on expiration. Continue for three minutes.

When the above exercises have been practiced until they can be done easily, Exercises 1, 2, 3, and 5 may be discontinued and the following added to Exercises 4 and 6:

7. Stand erect. Produce an easy "ah" [ɑ]. Prolong it for five seconds; then release the remaining breath. Use as little air as possible in production of the tone. If possible, hold a flame

or feather about three inches in front of the mouth and produce a moderately loud tone with so little air that the flame does not flicker. Be sure that the throat remains relaxed. With practice, the tone should become quite steady. Gradually increase the duration of the tone until you can phonate steadily for at least fifteen seconds without nearing the end of your reserve of breath.

8. Stand erect with hands on the waist as before. Inhale. Produce an easy "ah" [ɑ]; prolong it for two seconds; stop; phonate again; stop; repeat for a total of five tones on the same breath. Use as little air as possible when phonating. Stop the tone by controlling the breath, not by closing the throat. Do not allow air to escape in the intervals between tones. Release the remaining breath at the end of the exercise.

9. Using the following poem simply as an exercise in breath control, read each two lines on one breath, at a normal rate and with as little expenditure of breath as possible. Continue practice until you can read four, six, and finally eight lines on a single breath, with an ample reserve of air at the end of the eighth line.

THE LOST CHORD

Seated one day at the organ,
I was weary and ill at ease,
And my fingers wandered idly
Over the noisy keys.

I do not know what I was playing,
Or what I was dreaming then:
But I struck one chord of music,
Like the sound of a great Amen.

It flooded the crimson twilight
Like the close of an angel's psalm,
And it lay on my fevered spirit
With a touch of Infinite calm.

It quieted pain and sorrow,
Like love overcoming strife:
It seemed the harmonious echo
From our discordant life.

—ADELAIDE ANNE PROCTOR.

The preceding exercises have been designed to develo control over the outflow of air and to insure adequat "breath support." In reading and speaking one does not, c course, talk as long as possible on a single breath and tak another only when forced to do so. If one is responding ade quately to his material, each inspiration is a part of th speaker's response to the idea he is about to express. Breath ing for speech must not be mechanical—it must be respor sive. When good breath control has been developed throug exercise, attention must then be concentrated on the idea which are being expressed. The location of each inspiratio and the duration of each expiration will be determined b the nature of the material and by the circumstances unde which it is spoken. The following selection is a good tes of breath control and of ability to phrase properly.

THE CATARACT OF LODORE

From its sources which well
In the tarn on the fell;
From its fountains
In the mountains,
Its rills and its gills;
Through moss and through brake,
It runs and it creeps
For awhile, till it sleeps
In its own little Lake.
And thence at departing,
Awakening and starting,
It runs through the reeds
And away it proceeds,
Through meadow and glade,
In sun and in shade,
And through the wood-shelter,
Among crags in its flurry,
Helter-skelter,
Hurry-skurry.
Here it comes sparkling,
And there it lies darkling;
Now smoking and frothing
Its tumult and wrath in.

Till, in this rapid race
On which it is bent,
It reaches the place
Of its steep descent.

The cataract strong
Then plunges along,
Striking and raging
As if a war waging
Its caverns and rocks among:
Rising and leaping,
Sinking and creeping,
Swelling and sweeping,
Showering and springing,
Flying and flinging,
Writhing and ringing,
Eddying and whisking,
Spouting and frisking,
Turning and twisting,
Around and around
With endless rebound!
Smiting and fighting,
A sight to delight in;
Confounding, astounding,
Dizzying and deafening the ear with its sound.

* * *

Retreating and beating and meeting and sheeting,
Delaying and straying and playing and spraying,
Advancing and prancing and glancing and dancing,
Recoiling, turmoiling and toiling and boiling,
And gleaming and streaming and steaming and beaming,
And rushing and flushing and brushing and gushing,
And flapping and rapping and clapping and slapping,
And curling and whirling and purling and twirling,
And thumping and plumping and bumping and jumping,
And dashing and flashing and splashing and clashing;
And so never ending, but always descending,
Sounds and motions for ever and ever are blending,
All at once and all o'er, with a mighty uproar,
And this way the water comes down at Lodore.

—Robert Southey.

Development of Voice Quality

The third step in voice improvement is the development of better voice quality. Voice quality is difficult to define. It is that characteristic of a tone which enables us to distinguish it from other tones which are similar in pitch, loudness, and duration. If you were to hear "Middle C" played on a piano, violin, and clarinet, you would have little difficulty distinguishing the instrument from which each sound had come, because of the difference in tone quality. Similarly, if you were to have several friends speak or sing notes or words on the same pitch, you might identify each by his characteristic tone quality. Some voices are shrill, some throaty, some nasal, some flat. Each individual has a characteristic quality of voice.

Quality is dependent on a number of factors. The first of these is the structure of the vocal mechanism. Just as the differences in tone between two violins are due to differences in material and construction, so much of the difference in quality between two voices is due to differences in the structure of the various parts of the vocal mechanism. A second factor is physiological—the condition of the muscles and surfaces of the larynx, pharynx, nose, and mouth. Some of the variations in the quality of an individual's voice from time to time are due to physiological factors. The muscles may be tense or fatigued; the surface tissues may be dry or covered with mucus; or swelling and inflammation may be present. A third factor is emotional. The quality of the voice is markedly affected by emotional changes and even by changes in mood and attitude. Anger, boredom, fear, surprise, disgust, and eagerness are all reflected in changes in voice quality. A fourth factor which affects voice quality is habit. Many defects of quality are due to poor habits of tone production. If any marked defects of quality exist, the general procedures outlined below for the improvement of tone quality will be found inadequate. In such cases the nature and causes of the difficulty must be diagnosed, and

the particular measures required must be determined for each individual case.

Tone must be produced with a minimum of tension in the larynx, pharynx, tongue, and jaw. Tiredness in the throat and increasing huskiness after the voice has been used steadily are indications of throat strain due to unneccesary tension. Elimination of such tensions is the first step in the development of good tone quality. Where throat tension is associated with general bodily tension, relaxation exercises must begin with general bodily relaxation. Physical or emotional causes of tension must be eliminated and the individual must learn to relax.

Exercises for General Bodily Relaxation

1. Stand erect. Inhale deeply. Raise the shoulders as high as possible. Rise on the toes. Stretch the arms out to the sides at shoulder level. Spread the fingers widely. Stretch the neck. Clench the jaw. Tense all the muscles in the body. Maintain the tension as long as possible. Drop back on the heels. Relax the jaw and neck muscles and allow the head to drop forward. Relax the hands, then the arms, allowing them to drop heavily to the sides. Drop the shoulders. Stand limply, with the body sagging. Relax as much as possible. Breathe slowly and deeply several times. Slowly draw the head and body erect without allowing the muscles to tense more than is absolutely necessary. Walk about; then sit down in slow motion with a minimum of tension. Get in the habit of checking on yourself occasionally during the day to see whether you have allowed unnecessary muscular tension to develop.

2. Stand erect with the feet about eighteen inches apart. Drop the head forward and close the eyes. Relax the arms so that they hang heavily from the shoulders. Drag the left foot forward by swinging the body to the right, with the left shoulder leading. Keep the body, neck, arms and legs relaxed. Drag the right foot forward, then the left and the right again. Bring the feet together. Slowly draw the body and head erect, assuming your normal posture with a minimum of tension.[3]

[3] For a more extensive treatment of general relaxation, as well as an excellent technique, see Edmund Jacobsen's *You Must Relax*. New York: McGraw-Hill Book Co., 1934.

Tensions of the jaw and throat frequently result from wrong methods of initiating or projecting tone. The inexperienced speaker, singer, or actor produces tone with an excessive amount of effort and attempts to make the voice carry by straining and shouting. Good tone quality and the development of optimum resonance necessitate learning to "open the throat" and produce tone with a minimum of effort. The following exercises are designed to relieve undesirable tensions of the jaw and throat and to develop a method of initiating tone with the least possible effort.

Exercises to Relax the Jaw and Throat

1. Drop the head forward and roll it gently from side to side until the neck muscles feel relaxed. Lift the head slowly while taking in a breath. Allow the jaw to sag as the head is lifted, taking the breath through the mouth as soon as the lips have parted. If the jaw fails to relax, draw the hands down the face as the head is lifted. Release the breath in an easy sigh through the open mouth.

2. Relax the jaw as above. Inhale through the mouth and whisper slowly, "Alpha, beta, gamma, delta." Feel the heaviness of the jaw. Use it as little as possible in articulation of the consonants in the exercise. Allow the jaw to drop into the relaxed position after each consonant. Repeat, using a moderately soft, low-pitched tone.[4]

3. Relax the jaw. The teeth should be at least the width of the thumb apart. Without moving the jaw, chant slowly in an easy tone: "Ah-la-na-ta-da-ya." The jaw should be relaxed, not held open by muscular tension. If there is any difficulty in eliminating jaw movement, a mirror should be used.

4. Relax the jaw. Chant slowly and softly: "Ah-ung-ah-la; ah-ung-ah-la; ah-ung-ah-la." Keep the tone clear, being particularly careful to avoid nasality in the vowels. The tone should be continuous and should be produced without noticeable tension of the throat.

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[4] This and certain other exercises in this chapter were suggested by Professor F. W. Orr, author of *Voice for Speech*. New York: McGraw-Hill Book Co., 1938.

Exercises to Improve Tone Quality

1. Read a selection of your own choice, first in tense "stage" whisper, then in an "open" breathy whisper. Feel the difference in throat tension under these two conditions. Whenever you become aware of throat tension in subsequent exercises or readings, return to the open whisper as a means of relaxing the throat.

2. Inhale easily through the mouth; then hum softly on a moderately low pitch. You should be able to feel vibration with the fingers on the lips and on the bridge of the nose. Make as clear a tone as possible.

3. Starting with an easy hum, as in the preceding exercise, allow the jaw to relax slowly and the mouth to open until the tone becomes a steady, clear "ah" [ɑ]. Hold the tone for about five seconds. Repeat, first with an "oh" [ou], then with an "ee" [i], following the initial "m" [m]. The tone should not be interrupted in the transition from "m" to the vowel.

4. Repeat the above exercise on each of two pitches above and below the pitch you used previously. Concentrate on relaxation of the throat and on a pure, sustained tone.

5. Read the following stanzas *very softly* in as clear a tone as you can produce.

THE BELLS

Hear the sledges with the bells—
  Silver bells!
What a world of merriment their melody foretells!
  How they tinkle, tinkle, tinkle,
    In the icy air of night!
  While the stars that oversprinkle
  All the heavens seem to twinkle
    With a crystalline delight;
  Keeping time, time, time,
  In a sort of Runic rhyme,
To the tintinnabulation that so musically swells
  From the bells, bells, bells, bells,
    Bells, bells, bells—
From the jingling and the tinkling of the bells.

—Edgar Allan Poe.

THE BUGLE SONG

The splendour falls on castle walls
And snowy summits old in story;
The long light shakes across the lakes,
And the wild cataract leaps in glory.
Blow, bugle, blow, set the wild echoes flying,
Blow, bugle; answer, echoes, dying, dying, dying.

O hark! O hear! how thin and clear,
And thinner, clearer, farther going!
O sweet and far, from cliff and scar,
The horns of Elfland faintly blowing!
Blow, let us hear the purple glens replying:
Blow, bugle; answer, echoes, dying, dying, dying.

O love, they die in yon rich sky,
They faint on hill, or field, or river:
Our echoes roll from soul to soul,
And grow forever and forever.
Blow, bugle, blow, set the wild echoes flying.
And answer, echoes, answer, dying, dying, dying.

—ALFRED TENNYSON.

6. Read the preceding stanzas again, this time with a normally loud voice but with no increase in throat tension. If you feel tension, read more softly, even in an open whisper if necessary. The purpose of this exercise is to enable you to produce tones of average loudness without throat tension.

Development of Pitch Range and Flexibility

The fourth step in voice improvement is the development of improved pitch range and flexibility. The pitch of the voice is determined by the length, mass, and tension of the vocal folds. The pitch of men's voices is lower than that of women's because a man's vocal folds are, on the average, about a third longer and larger than a woman's. Each individual has what may be termed a "natural pitch level" which is determined principally by the size of his larynx. This natural level is the pitch at which the larynx will produce tone most efficiently. Each individual has, also, a charac-

teristic, or habitual, pitch level. This is his "average" pitch, the pitch he uses most frequently. If someone were to be asked to read this paragraph aloud, it would be observed that the pitch of his voice was constantly changing. Nevertheless it would be easy to determine whether his voice was higher or lower than the voice of someone else. In making such a comparison we would be comparing the average pitches of the two voices and would thus determine each individual's habitual pitch level.

Unfortunately, the habitual pitch level and the natural pitch level do not always coincide. Many people learn to speak on a pitch higher or lower than their natural level because they feel that a higher or a lower voice is more "fashionable," "appropriate," or "interesting." An adolescent boy or girl may retain a childish pitch level after the growth of the larynx that accompanies puberty has lowered the natural pitch. If the habitual pitch differs from the natural pitch, the voice is likely to be less resonant and the quality less pleasant than it would be if the natural pitch were used. The increased tension required to produce a pitch higher or lower than the natural pitch results in tiring the throat, with increased huskiness or breathiness of the tone. Occasionally laryngitis, with a consequent loss of voice, may result.

If the pitch of an individual's voice is appropriate to his age and sex, if the voice quality is not breathy, husky, hoarse, or throaty, if the voice is not weak, and if no throat tension is apparent after a period of tone production, it may be presumed that the habitual pitch is the natural pitch. If the natural pitch is not being used, its use should be established before the student advances to the development of pitch range.

Exercises to Establish an Optimum Pitch Level

1. Read the following sentences aloud in your normal tone of voice: (*a*) John's mother, father, and brother were gone. (*b*) The door was not locked. Prolong the vowel sound in the words

"John" and "locked." The pitch of these tones is probably your habitual pitch. If the two tones are on different pitches, your habitual pitch will lie between them. As a check, read the first stanza of the selection on page 206 in a monotone. The pitch of this tone is most likely to be your habitual pitch.

2. Hum down the scale to the lowest tone you can sustain. Find the pitch of this tone on the piano. Sing up the scale to the highest falsetto note you can sustain. Repeat this procedure three times and determine the number of semitones between your lowest and your highest pitch. Divide this by four. The pitch which lies one-fourth of your total range above your lowest tone represents the best possible guess as to your natural pitch.[5] If this is your natural pitch, as you sing up the scale you should find that your voice has somewhat better resonance on this pitch than on any other pitch.

3. If your natural pitch differs from your habitual pitch by more than two or three semitones, ask your instructor's advice on a change of pitch.[6]

Pitch change in speech is of two types: *glides* and *steps*. A glide (or inflection) is a pitch change which is accomplished during phonation. In the colloquial expression of disbelief, "Oh, yeah?" the pitch change in the second word is a glide. A step is a pitch change accomplished in the interval between successive phonations. In the sentence "He did?" the pitch change is normally accomplished by a step. One of the differences between crooning and singing lies in the use of the glide in crooning as opposed to the use of the step in singing. A wide pitch range and an appropriate use of pitch variation are important characteristics of a good speaking voice. Research has indicated that superior speakers employ a range of approximately one octave in expository speaking or fac-

[5] This procedure is based on research by Pronovost and Fairbanks reported in: Fairbanks, Grant, "Recent Experimental Investigations of Vocal Pitch in Speech." *Journal of the Acoustical Society of America*, 11, April, 1940, pp. 457-466.

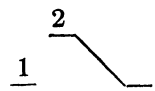
[6] Procedures used in effecting a change of pitch may be found in: Fairbanks, Grant, *Voice and Articulation Drillbook*. New York: Harper & Brothers, 1940. Van Riper, Charles, *Speech Correction*. New York: Prentice-Hall, Inc., 1939.

tual reading. The use of emotional material increases this range to two octaves, while actors not infrequently show a total range as great as three octaves in portraying a variety of emotions. The development of adequate pitch range and flexibility is an important phase of voice development. The following exercises indicate some of the procedures which may be used.

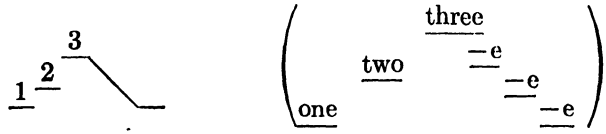
Exercises to Develop Pitch Range and Flexibility

1. Beginning on the lowest pitch you are able to sustain, sing up to the highest pitch you can reach. In successive attempts try to reach notes both lower and higher than your original limits.

2. Start with the count of one on your lowest pitch. Step up a tone on the count of two. Sustain the vowel and glide down on it to the beginning pitch, as



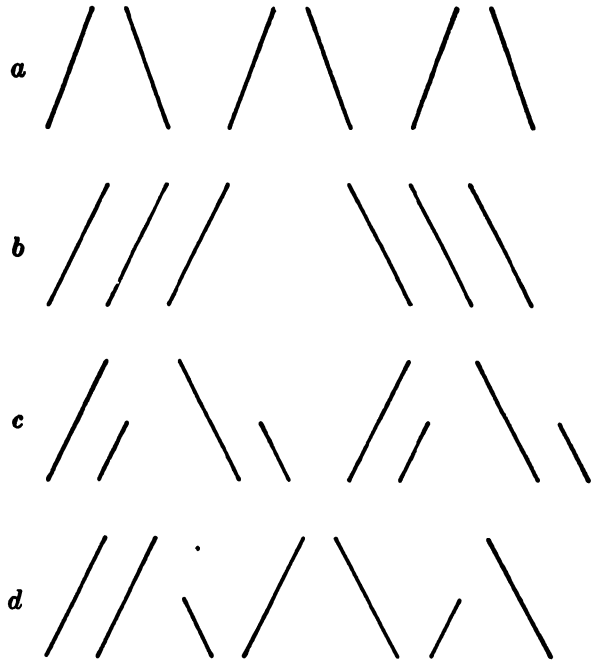
Step up two tones on a count of three, sustaining and gliding down to the beginning pitch on the vowel of the last number, as



Lengthen the count to four, six, eight, and higher if possible, always gliding down on the final vowel to your lowest pitch, until you reach the highest pitch you can sustain. A speaking tone, not a singing tone, should be used. This exercise may be varied by starting with your highest, rather than your lowest, tone and gliding up instead of down on the final vowel. If you have difficulty in making each step-interval a tone, you should practice with a piano.

3. Follow with your voice the inflection patterns shown below, using the sound "oh" [ou] or "ah" [ɑ]. Design other patterns,

varying the direction, length, and abruptness of the glides. Use the words "yes" and "no" instead of "oh" and "ah."



4. Read the following: "Who was it?" "John." "Who?" (in disbelief). "John." "No!" "Yes." "Why?" "Oh, because . . ." "I can't believe it." "Oh, you can't?" "No." "Why?" "Just because . . ."

5. Read one of the following selections:

ANTONY'S SPEECH AT CAESAR'S GRAVE

The noble Brutus
Hath told you Caesar was ambitious:
If it were so, it was a grievous fault;
And grievously hath Caesar answer'd it.
Here, under leave of Brutus, and the rest—
For Brutus is an honorable man;
So are they all, all honorable men—
Come I to speak in Caesar's funeral.

He was my friend, faithful and just to me:
But Brutus says he was ambitious;
And Brutus is an honorable man.
He hath brought many captives home to Rome,
Whose ransoms did the general coffers fill:
Did this in Caesar seem ambitious?
When that the poor have cried, Caesar hath wept:
Ambition should be made of sterner stuff:
Yet Brutus says he was ambitious;
And Brutus is an honorable man.
You all did see, that on the Lupercal,
I thrice presented him a kingly crown,
Which he did thrice refuse: was this ambition?
Yet Brutus says he was ambitious;
And, sure, he is an honorable man.

—JULIUS CAESAR.

THE GOBBO'S DILEMMA

Certainly my conscience will serve me to run from this Jew my master. The fiend is at mine elbow, and tempts me, saying to me, "Gobbo, Launcelot Gobbo, good Launcelot," or "good Gobbo," or "good Launcelot Gobbo, use your legs, take the start, run away." My conscience says, "No; take heed, honest Launcelot; take heed, honest Gobbo," or, as aforesaid, "honest Launcelot Gobbo; do not run; scorn running with thy heels." Well, the most courageous fiend bids me pack: "Via!" says the fiend; "away!" says the fiend; "for the heavens, rouse up a brave mind," says the fiend, "and run." Well, my conscience, hanging about the neck of my heart, says very wisely to me, "My honest friend Launcelot, being an honest man's son,—or rather an honest woman's son; for, indeed, my father did something smack, something grow to, he had a kind of taste;—well, my conscience says, "Launcelot, budge not." "Budge," says the fiend. "Budge not," says my conscience. "Conscience," say I, "you counsel well"; "Fiend," say I, "you counsel well"; to be ruled by my conscience, I should stay with the Jew my master, who, God bless the mark, is a kind of devil; and, to run away from the Jew, I should be ruled by the fiend, who, saving your reverence, is the devil himself. Certainly the Jew is the very devil incarnal; and, in my conscience, my conscience is but a kind of hard conscience, to offer to counsel me to stay with the Jew. The fiend gives the more friendly counsel; I will run, fiend; my heels are at your command; I will run.

—THE MERCHANT OF VENICE.

JABBERWOCKY

(Make this selection as dramatic as you can)

'Twas brillig and the slithy toves
  Did gyre and gimble in the wabe;
All mimsy were the borogoves,
  And the mome raths outgrabe.

"Beware the Jabberwock, my son!
  The jaws that bite, the claws that catch!
Beware the Jubjub bird, and shun
  The frumious Bandersnatch!"

He took his vorpal sword in hand:
  Long time the manxome foe he sought—
So rested he by the Tumtum tree,
  And stood awhile in thought.

And as in uffish thought he stood,
  The Jabberwock, with eyes of flame,
Came whiffling through the tulgey wood,
  And burbled as it came!

One, two! One, two! And through and through
  The vorpal blade went snicker—snack!
He left it dead, and with its head
  He went galumphing back.

"And hast thou slain the Jabberwock?
  Come to my arms, my beamish boy!
O frabjous day! Callooh! Callay!"
  He chortled in his joy.

—Lewis Carroll.

Developing the Carrying Power of the Voice

A fifth step in the development of voice is the development of the ability to project tone, that is, to make the voice carry. The carrying power of the voice is dependent on the intensity of the tone and on the acoustic conditions of the space in which the tone is projected. A voice which is

insufficiently loud will not carry. One which is too loud or has too little variation in loudness may be exceedingly disagreeable. Insofar as the speaker is concerned, the loudness of voice is determined by two factors: the relationship between the breath pressure and the action of the vocal folds; and the amount of amplification of tone by the resonators.

There are three principles which should be observed in achieving loudness. The first is that loudness cannot be achieved without adequate breath support to the very end of every phrase. The student who has not yet developed adequate breath control must do so. The second principle is that it is easier to achieve loudness on a tone of good quality than on a tone of poor quality. In working for loudness, the student must not sacrifice quality. The third principle is that loudness must not involve any unnecessary increase of throat tension. If there is an appreciable increase of throat tension, the quality of the voice will become progressively worse as phonation continues. This is a common experience at a football game, where hoarseness, huskiness, or complete loss of voice develops after a period of shouting. In the following exercises the student should not attempt to go beyond the point at which the quality of the tone becomes poorer and throat tension becomes perceptible.

Exercises to Develop Adequate Control of Loudness

1. Produce the vowel "ah" [ɑ] softly. Sustain it for ten seconds. Maintain good breath support and openness of the throat. Keep the pitch constant. Repeat several times, each time making the tone slightly louder than before. Continue until you reach a loudness level at which you begin to feel strain.

2. Produce the vowel "ah" [ɑ] softly. Gradually increase the loudness of the tone until at the end of ten seconds you are producing as loud a tone as you can produce without tension or noticeably poorer quality. Maintain good breath support to the end. If you find that you are expending appreciably more air on the louder tones, work with a flame as in Exercise 7, page 205.

3. Beginning with as soft a tone as you are able to produce, phonate "ah" [ɑ]. Gradually increase the loudness to your loudest tone; then decrease to your softest tone. Maintain good breath support. Repeat until you can execute smoothly this crescendo-diminuendo movement <>.

4. Read the following:

(*a*)

PHIL: (calling softly) Alice. Alice. Bob is walking in his sleep.

ALICE: Oh, Phil, wake him before he gets hurt.

PHIL: I don't want to startle him. Bob (softly). Bob. Bob. Bob (increasingly loud). He won't waken.

ALICE: You *must* make him hear.

PHIL: (quite softly) Bob. Bob. He's turning around. He's coming back.

ALICE: (softly) He's still asleep. Maybe we can get him to bed without waking him.

(*b*)

THE BELLS

I

Hear the sledges with the bells—
Silver bells!
What a world of merriment their melody foretells!
How they tinkle, tinkle, tinkle,
In the icy air of night!
While the stars that oversprinkle
All the heavens seem to twinkle
With a crystalline delight;
Keeping time, time, time,
In a sort of Runic rhyme,
To the tintinnabulation that so musically swells
From the bells, bells, bells, bells,
Bells, bells, bells—
From the jingling and the tinkling of the bells.

* * *

III

Hear the loud alarum bells—
Brazen bells!
What a tale of terror, now, their turbulency tells;
In the startled ear of night
How they scream out their affright!
Too much horrified to speak,
They can only shriek, shriek,
Out of tune,
In a clamorous appealing to the mercy of the fire,
In a mad expostulation with the deaf and frantic fire.
Leaping higher, higher, higher,
With a desperate desire,
And a resolute endeavor
Now—now to sit or never,
By the side of the pale-faced moon,
Oh, the bells, bells, bells!
What a tale their terror tells
Of Despair!
How they clang, and crash, and roar!
What a horror they outpour
On the bosom of the palpitating air,
Yet the ear it fully knows,
By the twanging,
And the clanging,
How the danger ebbs and flows;
Yet the ear distinctly tells,
In the jangling,
And the wrangling,
How the danger sinks and swells,
By the sinking or the swelling in the anger of the bells—
Of the bells—
Of the bells, bells, bells, bells,
Bells, bells, bells—
In the clamor and the clangor of the bells!

IV

Hear the tolling of the bells—
Iron bells!
What a world of solemn thought their melody compels!
In the silence of the night,
How we shiver with affright

At the melancholy menace of their tone!
For every sound that floats
From the rust within their throats
Is a groan.
And the people—ah, the people—
They that dwell up in the steeple,
All alone.
And who tolling, tolling, tolling,
In that muffled monotone,
Feel a glory in so rolling
On the human heart a stone—
They are neither man nor woman—
They are neither brute nor human—
They are Ghouls;
And their king it is who tolls;
And he rolls, rolls, rolls,
Rolls
A pæan from the bells!
And his merry bosom swells
With the pæan from the bells!
And he dances and he yells;
Keeping time, time, time,
In a sort of Runic rhyme,
To the pæan of the bells—
Of the bells.
Keeping time, time, time,
In a sort of Runic rhyme,
To the throbbing of the bells—
Of the bells, bells, bells—
To the sobbing of the bells;
Keeping time, time, time,
As he knells, knells, knells,
In a happy Runic rhyme,
To the rolling of the bells—
Of the bells, bells, bells—
To the tolling of the bells,
Of the bells, bells, bells, bells—
Bells, bells, bells—
To the moaning and the groaning of the bells.

—Poe.

Merely producing a tone loud enough to be heard will not insure a speaker's words being understood at a distance. The

speaker must learn to determine the acoustic conditions under which he is speaking and adjust to those conditions. He must learn to watch all sections of his audience to determine whether he is being heard and understood. He must learn to keep constantly in mind the section of the audience which it is most difficult to reach and never allow his voice to drop below the level at which they are able to hear. If a speaker's voice does not carry, he should avoid the temptation to raise the pitch and shout. He should first select two or three individuals in the most remote part of the audience and then, intensifying his responsiveness to his material, attempt to project his voice to these auditors without shouting. If this does not succeed, the following measures should be tried:

1. Increase breath support and openness of the throat.
2. Develop maximum resonance.
3. Articulate more clearly.
4. Reduce the speaking rate, increase the duration of accented vowels, and the number and length of the pauses.
5. As a last resort, increase the force of the tone, but avoid tensing the throat. Any appreciable increase in throat tension is likely to mean that the voice will get progressively worse.

If there is a perceptible echo in the room, the speaker must determine the reverberation time—the time required for the echo to die down—and must make whatever adjustments are necessary to prevent the echo's drowning out important words and phrases. This problem has been discussed in the preceding chapter. Practice the following exercises in rooms of varying size. Watch the reactions of your auditors carefully and pay attention to the sound of your voice in the room.

Exercises in the Projection of Tone

1. With the members of the class scattered over a large room, stand in the front of the room and begin to count. The first five numbers should be just loud enough for those in the first row to hear, the second five numbers should barely reach those in the fifth row, the third five those in the tenth row, and so on.

2. Start with a tone loud enough to be heard in the back of the room. Count as in the previous exercise, gradually reducing the loudness of the tone until you can barely be heard in the front row.

3. Start a conversation with another member of the class. Continue the conversation while he moves farther and farther toward the back of the room. There should be no point at which you begin to shout. The increase in loudness should be gradual and should not be accompanied by any appreciable increase in effort.

4. Repeat Exercise 1, using poetry or prose of your own selection. Never increase the loudness beyond the point at which you can make yourself heard without strain. If you have difficulty making the tone carry, try the procedure suggested above in the text.

5. Prepare a short speech on a subject in which you are vitally interested. When you deliver your speech, select someone in the back of the room and direct your speech to him. Assume that he disagrees with your point of view and do your best to persuade him.

Duration of Speech Sounds

In addition to quality, pitch, and loudness, every sound has a certain duration in time. In speech, the duration of successive sounds and pauses determines the rate of speaking. Variation of rate is as important to a speaker as "change of pace" is to a baseball pitcher. Speech which lacks variation in rate soon becomes monotonous. Although the rate of speech may vary a great deal from situation to situation, each individual has a more or less characteristic rate. One person may be spoken of as a rapid speaker, another may be considered slow in speech. The preferred rate is one which is neither so fast that the speech is not easily understood nor so slow as to be conspicuous.

Rate is varied in either of two ways: by increasing or decreasing the duration of sounds or by increasing or decreasing the number and length of pauses. The duration of sounds is determined by three factors. The first of these is phonetic. The vowel sounds in each of the following columns

differ from those in the other columns in length, for phonetic reasons:[7]

be	bead	beat
saw	call	caught
cow	brown	out
tea	team	teeth
lee	lean	lease
toe	toad	tote
blue	loon	loot

The second factor governing the duration of sounds is emphasis. If the following sentence is read with the emphasis indicated, the duration of tone in the word "I" will be seen to increase when that word is emphasized:

"I never *saw* him."
"*I* never saw him."

The third factor involved is the emotional state of the speaker. In states of excitement, such as anger or fear, the rate is usually rapid and the duration of sounds relatively shorter, while in states of depression, such as grief, the rate is usually slow and the duration of sounds is proportionately greater. The number and length of pauses depends on factors which have been previously discussed.

Exercise in Variability of Rate

Study the following selections carefully until you understand them thoroughly and respond adequately to the situation described, then read aloud:

(1)

SOUTHWARD AFTER APPOMATTOX[8]

Let me picture to you the footsore Confederate soldier, as, buttoning up in his faded gray jacket the parole which was to bear testimony to his children of his fidelity and faith, he turned his face southward from Appomattox in April, 1865. Think of him

[7] Can you determine the phonetic rule governing the relative duration of these vowels?

[8] From *The New South* by Henry W. Grady, copyright, 1904. By permission of the author and Charles E. Merrill Company, publisher.

as ragged, half-starved, heavy-hearted, enfeebled by want and wounds; having fought to exhaustion, he surrenders his gun, wrings the hands of his comrades in silence, and lifting his tear-stained and pallid face for the last time to the graves that dot the old Virginia hills, pulls his gray cap over his brow and begins the slow and painful journey. What does he find—let me ask you, who went to your homes eager to find in the welcome you had justly earned, full payment for four years' sacrifice—what does he find when, having followed the battle-stained cross against overwhelming odds, dreading death not half so much as surrender, he reaches the home he left so prosperous and beautiful? He finds his home in ruins, his farm devastated, his slaves free, his stock killed, his barns empty, his trade destroyed, his money worthless; his social system, feudal in its magnificence, swept away; his people without law or legal status, his comrades slain, and the burdens of others heavy on his shoulders. Crushed by defeat, his very traditions are gone; without money, credit, employment, material, or training; and besides all this, confronted with the gravest problem that ever met human intelligence—the establishing of a status for the vast body of his liberated slaves.

—*The New South*, by HENRY W. GRADY.

(2)

KING ROBERT OF SICILY

Robert of Sicily, brother of Pope Urbane
And Valmond, Emperor of Allemaine,
Appareled in magnificent attire,
With a retinue of many a knight and squire,
On St. John's eve, at vespers, proudly sat
And heard the priests chant the Magnificat.
And as he listened, o'er and o'er again
Repeated, like a burden or refrain,
He caught the words, "Deposuit potentes
De sede et exaltavit humiles;"
And slowly lifting up his kingly head,
He to a learned clerk beside him said,

"What mean these words?" The clerk made answer meet,
"He has put down the mighty from their seat,
And has exalted them of low degree."
Thereat King Robert muttered scornfully,
" 'Tis well that such seditious words are sung

Only by priests and in the Latin tongue;
For unto priests and people be it known,
There is no power can push me from my throne!"
And leaning back, he yawned and fell asleep,
Lulled by the chant monotonous and deep.

When he awoke it was already night;
The church was empty, and there was no light,
Save where the lamps, that glimmered few and faint,
Lighted a little space before some saint.
He started from his seat and gazed around,
But saw no living thing and heard no sound.
He groped towards the door, but it was locked;
He cried aloud, and listened, and then knocked,
And uttered awful threatenings and complaints,
And imprecations upon men and saints.
The sounds re-echoed from the roof and walls
As if dead priests were laughing in their stalls.
At length the sexton, hearing from without
The tumult of the knocking and the shout,
And thinking thieves were in the house of prayer,
Came with his lantern, asking, "Who is there?"
Half choked with rage, King Robert fiercely said,
"Open: 'tis I, the King! Art thou afraid?"
The frightened sexton, muttering, with a curse,
"This is some drunken vagabond, or worse!"
Turned the great key and flung the portal wide;
A man rushed by him at a single stride,
Haggard, half naked, without hat or cloak,
Who neither turned, nor looked at him, nor spoke,
But leaped into the blackness of the night
And vanished like a specter from his sight.

Robert of Sicily, brother of Pope Urbane
And Valmond, Emperor of Allemaine,
Despoiled of his magnificent attire,
Bareheaded, breathless, and besprent with mire,
With sense of wrong and outrage desperate,
Strode on and thundered at the palace gate;
Rushed through the court-yard, thrusting in his rage
To right and left each seneschal and page,
And hurried up the broad and sounding stair,
His white face ghastly in the torches' glare.

From hall to hall he passed with breathless speed;
Voices and cries he heard, but did not heed,
Until at last he reached the banquet room,
Blazing with light and breathing with perfume.

There on his dais sat another king,
Wearing his robes, his crown, his signet-ring,
King Robert's self in feature, form and height,
But all transfigured with angelic light!
It was an Angel; and his presence there
With a divine effulgence filled the air.

A moment speechless, motionless, amazed,
The throneless monarch on the Angel gazed,
Who met his look of anger and surprise
With the divine compassion of his eyes;
Then said, "Who art thou? and why come'st thou here?"
To which King Robert answered with a sneer,
"I am the King, and come to claim my own
From an impostor, who usurps my throne!"
And suddenly, at these audacious words,
Up sprang the angry guests, and drew their swords!
The Angel answered with unruffled brow,
"Nay, not the King, but the King's Jester, thou
Henceforth shalt wear the bells and scalloped cape,
And for thy counselor shalt lead an ape;
Thou shalt obey my servants when they call,
And wait upon my henchmen in the hall!"

—LONGFELLOW.

THE TELL-TALE HEART

The officers were satisfied. My *manner* had convinced them. I was singularly at ease. They sat, and while I answered cheerily, they chatted of familiar things. But, ere long, I felt myself getting pale and wished them gone. My head ached, and I fancied a ringing in my ears: but still they sat and still chatted. The ringing became more distinct:—it continued and became more distinct: I talked more freely to get rid of the feeling: but it continued and gained definitiveness—until, at length, I found that the noise was *not* within my ears.

No doubt I now grew *very* pale;—but I talked more fluently, and with a heightened voice. Yet the sound increased—and what could I do? It was a *low, dull, quick sound—much such a*

sound as a watch makes when enveloped in cotton. I gasped for breath—and yet the officers heard it not. I talked more quickly—more vehemently; but the noise steadily increased. I arose and argued about trifles, in a high key and with violent gesticulations; but the noise steadily increased. Why *would* they not be gone? I paced the floor to and fro with heavy strides, as if excited to fury by the observation of the men—but the noise steadily increased. Oh God! what *could* I do? I foamed—I raved—I swore! I swung the chair upon which I had been sitting, and grated it upon the boards, but the noise arose over all and continually increased. It grew louder—louder—*louder!* And still the men chatted pleasantly, and smiled. Was it possible they heard not? Almighty God!—no, no! They heard!—they suspected!—they *knew*!—they were making a mockery of my horror!—this I thought, and this I think. But anything was better than this agony! Anything was more tolerable than this derision! I could bear those hypocritical smiles no longer! I felt that I must scream or die! and now—again!—hark! louder! louder! louder! *louder*!

"Villains!" I shrieked, "dissemble no more! I admit the deed! —Tear up the planks! here! here!—It is the beating of his hideous heart!"

—Poe.

Demonstration of breath control, good tone quality, and adequate variability of pitch, loudness, and rate in the exercises suggested in this chapter will not necessarily insure an improved voice in daily speech. The fundamental exercises must be repeated regularly, and a persistent effort must be made to carry the basic principles over into daily speech. The most important of all these principles is that, normally and ideally, voice is an integral part of the speaker's total response. No amount of time spent on vocal exercises will result in an adequate voice unless the speaker is capable of responding in a vital and intelligent manner to the various situations in which he is called upon to use his voice.

CHAPTER 10

Group Discussion and Conversation

We shall be concerned in this chapter with the kind of speaking which takes place in face-to-face groups through the medium of informal discussion and conversation. Two typical situations will suffice as illustrations. The first of these is a discussion group of eight to ten persons, let us say, brought together for the purpose of considering an important, common problem. Their purpose is to investigate the problem, to share experiences and points of view, to reach a better understanding, and, if possible, to solve the problem. The participants are seated around a conference table, and the discussion is directed by an appointed leader. The second situation is an after-dinner conversation in the living room of the host. Five or six people gather around the fireplace to talk about subjects of mutual interest which may serve to contribute to a pleasant evening.

Obviously, the two situations which we have described have many things in common, and yet they are by no means identical in spirit, purpose, or method. It is wholly arbitrary to attempt to draw any hard and fast distinction between group discussion and conversation. The important element for the student of speech which these two activities have in common is that they both proceed through the exchange of ideas and feelings in relatively informal situations where every person is privileged to talk. Ideas are advanced, questions asked, and replies made in direct, face-to-face relations. The range of the conditions and circumstances under which this kind of speaking takes place is enormous. It extends from park bench conversations and neighborly exchanges over the back fence to the most sophisticated social conversations and to the deliberations of boards of directors and com-

mittees whose decisions may affect the lives of thousands of individuals. Included are many classroom discussions, seminars, study clubs, interviews, conferences, and the like. By all odds, most of the speaking in which we engage is of this kind, group discussion and conversation.

Group Discussion

The rationale of discussion

"Discussion may be defined as the cooperative deliberation of problems by persons thinking and conversing together in face-to-face or co-acting groups under the direction of a leader."[1] As we have said, we shall confine our attention in this chapter to the role of discussion in face-to-face groups. Perhaps the best way to get before us the conception of discussion which we are using here is to analyze the implications of this definition in some detail.

Discussion as the deliberation of problems. Discussion is basically a problem-solving activity. As such, it has its inception in one of three kinds of problems: *fact, value,* or *policy.* A factual problem raises the simple question, "Is this true?" It involves an attempt to resolve a simple factual question in any area whatsoever. A question of value, on the other hand, involves an attempt to assess the goodness or badness of any institution, person, or thing. For example, we might raise the question, "Is the sit-down strike justifiable?" The specific problem involved in this kind of question is that of determining the worth or merit of something, as distinguished from the deliberation of its existence or nonexistence, or any other purely factual matter. The third type of problem, that of policy, is concerned with what should be done in any given situation. A problem is raised and the question is, "What can be done about it?" It is obvious that the deliberation of these questions of policy must of necessity include the consideration of subsidiary questions of

[1] McBurney, James H., and Hance, Kenneth G., *The Principles and Methods of Discussion,* p. 10. New York: Harper & Brothers, 1939.

fact and value upon which decisions must be made before the policy can be determined. Questions of value and of policy are most amenable to discussion.

Problems for discussion should always be phrased as questions. Insofar as possible the phraseology of the question should delimit the specific area for discussion and should avoid the use of any language which is prejudicial to a fair discussion of the problem.

Discussion as reflective deliberation. To understand the true nature of discussion, it is necessary that we make a distinction between reflective thinking or constructive thinking, and intentional reasoning. The reflective thinker undertakes to solve a problem by thinking that problem through without any commitments or predetermined conclusions. Ideally, he is interested in finding the right answer and the most suitable solution to the problem without any predisposition to defend some particular answer or solution. At least, if this predisposition exists, he is capable of rising above it in the interests of straight thinking on the problem. The intentional reasoner, on the other hand, differs from the reflective thinker in the fact that he begins with a predetermined conclusion and attempts to supply reasons in defense of this proposition. The advocate, the lawyer, the salesman, the campaigner, and the propagandist are typical of speakers who, by the very nature of the task they are trying to accomplish, make use of intentional reasoning. They start with a proposition, and whether they have arrived at this proposition reflectively, or whether it is handed to them and they are paid to defend it, they are, nonetheless, intentional in their reasoning.

While this distinction between reflective thinking and intentional reasoning is relative rather than absolute in most of the practical situations in which it may be applied, the fact remains that a clear understanding of this factor enables us to see most clearly the differences between discussion and inquiry on the one hand, and persuasion, debate, and all forms of advocacy on the other.

Discussion as cooperative deliberation. If reflective thinking is to be entered into jointly by two or more persons, it must be undertaken cooperatively. There is no other way of doing it. This is true because just as soon as people become competitive with respect to the ideas they are considering, reflective thinking begins to fade out and be replaced by intentional thinking. In a debate, for example, there is a competition between two or more persons committed to logically incompatible propositions. Each defends his own views. While all significant discussion involves differences of opinion, the very purpose of the group is to look into these differences so that a better understanding may be reached. By cooperation, then, we mean a willingness on the part of each participant in the discussion to hold his views tentatively, subject to correction and revision. We mean also the willingness and ability of the individual to objectify himself to the extent that he can give a fair hearing to the ideas and proposals of other members of the group. Cooperation means teamwork in a common cause; and in discussion, that common cause is the search for the truth about the subject discussed.

Discussion as directed deliberation. Discussion is typically conducted under the direction of an appointed leader. His task is that of helping the group to realize their full potentialities in dealing with the problem which they have before them. It is the concept of democratic leadership, which we have in mind here. An effective discussion leader does not dominate the group as individuals, nor does he attempt to force them to any particular conclusion. What the leader's duties are we shall analyze below. Suffice it to say here that the ideal leader is an alert, sympathetic individual who knows how to draw people out, how to give organization to discussion without channeling it unduly, and who knows how to deal with differences and conflicts when they arise.

Discussion in face-to-face or co-acting groups. The typical situation for discussion is the face-to-face group,

where all the participants are seated so that they can see and hear each other without going to the front of the room. The usual arrangement is a circle, semicircle, or hollow square. By a co-acting group we mean a typical speaker-audience relationship. There is a well-defined audience and a central source of stimulation to which the auditors are responding together. Discussion may be adapted to this kind of situation through the use of special methods designed for the purpose. We shall consider these methods in Chapter 13.

Discussion in learning and policy-determining groups. The special purposes of a learning group may be many and varied, but basically such a group will be interested in their own growth in essential skills, and in knowledge and understanding of the problem under discussion. Few will deny the contribution which discussion can make to the learning process. In fact, it probably finds its most normal setting and greatest scope and usefulness in this kind of situation.

The policy-determining group is an action group, one that is attempting to solve a problem for the purpose of coming to a conclusion which may be used to govern future conduct with respect to the problem. Discussion, as here defined, can play a valuable role in the deliberations of such groups, especially in small, relatively homogeneous groups. As we shall see in a later chapter, however, the typical procedure for the policy-determining group is parliamentary debate, debate conducted under the rules of parliamentary procedure. Such debate is the almost inevitable method in large legislative assemblies; and even in small policy-determining groups, committees, and the like, discussion must give way to debate when it is impossible otherwise to reach a definite decision.

The above considerations should give us some insight into the nature and purpose of discussion. Any thinking person must be able to see the tremendous social importance of the widespread discussion of human affairs. Discussion as we have presented it here is, in many respects, the very essence of the democratic process, whether this process be applied

in the home, the school, the church, or in any of our local, state, and national governmental institutions. The proof of this is clear and simple. You have heard it before. If democracy means anything at all, it means the right of the individual to exercise a free choice among the elements of his culture, whether those elements be ideas, individuals, or things. What is more, any choice that is to be free in the best sense must be informed. Any factor or activity, then, which censors, distorts, or otherwise manipulates dishonestly the facts upon which democratic decisions must be made, is a denial of freedom of choice and, to the extent that it operates, a denial of the democratic process. While it is true that freedom of choice is a relative thing in any complex, organized society, the fact remains that the widespread discussion of social, political, and economic questions, questions of value and public policy, can probably do more than anything else to keep people free. Force and domination thrive on ignorance, subterfuge, and dishonesty. As a method of dealing with social problems, discussion and critical deliberation in the broadest sense are the direct antitheses of force and domination. They represent an attempt to bring to the solution of questions of value and public policy the same kind of objective method which has succeeded so markedly in the physical and natural sciences. The extent to which this can be accomplished is probably the ultimate measure of democracy as a way of life.

Despite the fact that it is patently difficult to deal with social and political problems exclusively on the level of critical deliberation, there is considerable evidence to show that this method can be widely used. As a result of experiments with group discussion, we can report with some assurance four conclusions relative to this point. In the first place, we know that attitudes toward social problems do change as a result of discussion. We know, secondly, that people tend to come closer together as a result of discussion—that the dispersion of the initial attitudes toward the problem is reduced after a discussion of the problem. Thirdly, as a result

of discussion, people tend to arrive at sounder and more acceptable attitudes than those which they held when they went into the discussion; that is to say, their post-discussion positions more nearly conform with a consensus of experts on the problem than did their initial positions. Finally, we know that the greatest influence in discussion is exerted by persons with the greatest competence and ability. These findings would seem to present rather substantial evidence that it is possible for people to get some place with discussion when they know what it is and how to use it.[2]

Before going on to a consideration of the methods of discussion, some comment should be made about the kind of contribution which this activity can make to the individual. It is not unreasonable to expect that experiences in properly conducted discussions should result in growth in the individual's capacity to think reflectively and to cooperate with others in the solution of problems. There is some evidence to indicate that such is the case.[2] Likewise, discussion gives the individual a chance to talk himself out, to let off steam, to rub shoulders with others in a group undertaking. This experience undoubtedly has a healthy socializing effect; the effect should be to reduce egocentricity and to develop more objective attitudes toward people and ideas. Here again there is some experimental evidence to support this position.[2]

The methods of discussion

The principal problems of method arise in connection with preparation, participation, and leadership of discussion. We

[2] For a summary of experimental studies dealing with discussion, see J. F. Dashiell, "Experimental Studies of the Influence of Social Situations on the Behavior of Individual Human Adults," *Handbook of Social Psychology*, edited by Carl Murchison (Worcester, Massachusetts: Clark University Press, 1935); see also Karl F. Robinson, *The Effects of Group Discussion on the Social Attitudes of College Students*, (Unpublished doctoral dissertation, Northwestern University, 1940); Alma Johnson, "An Experimental Study of Group Discussion as a Method of Teaching Certain Fundamentals of Speech," *Quarterly Journal of Speech*, Vol. XXV, No. 3, Oct. 1939, p. 440; and Ray H. Simpson, "A Study of Those Who Influence and of Those Who are Influenced in Discussion," *Teachers College, Columbia University Contributions to Education*, No. 748 (New York: Bureau of Publications, Teachers College, Columbia University, 1938).

shall offer suggestions on how to conduct oneself in a discussion, with respect to these three phases of the activity.

Preparation. First of all, we wish to make it perfectly clear that it is impossible to conduct profitable discussion unless the facts bearing on the problem are available to the group. If we are interested in discussion as a means of controlling the existential environment, then the facts of the situation are going to have to be before the group. Otherwise the discussion will be purely speculative and academic, with limited pragmatic value.

The best kind of preparation for discussion is a continuous process. It springs from an interest in social, political, and economic problems, and consists in regular reading in the newspapers, periodicals, and books presenting contemporary points of view on these problems. The person with this kind of reading program is incomparably better prepared to take part in discussion than one whose leisure time is given over rather exclusively to bridge and the sports page. For class discussions and other discussions where the subject for consideration is known in advance, it is recommended that some direct preparation be made. We suggest the discussion outline as an aid to such preparation. This instrument may be used as a study guide, and it may or may not be reported in written form. In either case, it indicates the areas in which some preparatory thinking and investigation can well be undertaken. On any problem there are five aspects to be considered: first, the definition of the problem; second, the analysis of the problem; third, the proposal of possible solutions to the problem; fourth, the tentative conclusion; and fifth, suggestions for putting the best solution into operation.

The following discussion outline may be used as a working model in drawing up instruments of this kind.[3] For class discussion we recommend that students prepare such outlines. They present tangible evidence of the extent and nature of the preparation that has been made and contribute

[3] Prepared and submitted by Miss Marie Brittin, senior in The School of Speech, Northwestern University.

immeasurably to the productiveness of the discussion. These outlines are not designed to commit the individual in any way, nor should one feel under any obligation whatsoever to adhere to the thinking presented in his outline during the discussion. The purpose of the outline has been served completely if it has encouraged a systematic investigation of the subject.

DISCUSSION OUTLINE

Who Should Go to College?

I. Definition of the Problem
   A. "Should go" may involve severe limitation, no limitation, or any variation between these two extremes.
   B. "College" refers to any institution of higher learning beyond the secondary level.
   C. A wide variation now exists among college entrance requirements.
      1. The two admission requirements in most prevalent use are:
         a. College admission founded on some form of accrediting of high schools on the basis of standardization of curricula, training and experience of faculty, and physical equipment of the school plant.
         b. Examination of students, combined with school record, and the completion of prescribed units of work.
      2. The general trends in college admission requirements are:
         a. Increased attention to personal qualities of the student, and the collection of many types of evidence as to his past achievements.
         b. Emphasis on general school records, standards and recommendations, rather than formal unit requirements. See *School and Society*, September 24, 1938, "Trends in College Admission Requirements," by Harold A. Fergusan, pp. 407-411.

II. Analysis of the Problem
   A. Criteria or values by which to judge proposals.
      1. Our first and most important objective is the preservation and growth of democracy, which provides for the development of every individual to the height of his capacity.

2. The second objective is to pursue that plan which will make happiness possible for the greatest number for the longest time.
3. The third objective is adequately to provide, and not overcrowd, occupational fields, maintaining national economic adjustment and efficiency.
4. It is necessary to select that plan which will make possible the accomplishment of the objectives of higher education, i.e., self-realization, vocational and cultural training.

B. Causal relationships.
1. Educational opportunity under existing admission procedures.
a. Are there too many students enrolled in universities?
(1) Colleges have larger enrollments now than ever before in their history.
(*a*) In 1900 the total enrollment was 103,351, but in 1938 the total enrollment had increased to 1,459,399. See *The Educational Record*, July 1938, "Some Issues in Higher Learning," by O. C. Carmichael, p. 323.
(*b*) There has been an increase of 22% in college enrollment between 1930 and 1938. See *School and Society*, September 1939, "Recent Trends In Collegiate Enrollment," by Dr. Raymond Walters, p. 325.
(2) There is a lack of facilities to provide for the increased number of students.
(3) There are a large number of failures among college students.
(*a*) A study of twenty-four universities showed that of the 9,305 students who withdrew, between 1930-35, 18.9% or one out of six left because of failure in academic work. See *School Life*, January 1939, "Why Students Leave College," by John H. McNeely, p. 115.
(*b*) A survey, based on data gathered by the Office of Education, revealed that 33.8% of the 15,535 students studied, left at the end of the freshman year, 16.7% left when sophomores, 7.7% when juniors, and 3.9%

left when seniors. See Office of Education Bulletin 1937, No. 11, *College Student Mortality*, p. 105.

(4) Circumstances prevent the development of each student to the height of his ability.

(*a*) Instruction is organized for the poorer student, and this results in a leveling off of the capacity and knowledge of all students.

(*b*) Personal contact with professors is almost impossible due to heavy teaching loads.

b. Are the professional and occupational fields overcrowded?

(1) The existence of many highly educated people whose ambitions have been frustrated is unhealthy for any nation. See *Harper's Magazine*, May 1938, "The Future of Our Higher Education," by James Bryant Conant, pp. 561-571.

(*a*) Forty-eight per cent of those young men and women who left school to seek work, or 400,000 between the ages of sixteen and twenty-four were unemployed in 1935. See Public Affairs Pamphlet No. 22 (revised) 1940, *Youth in the World of Today*, by Maxwell S. Stewart, p. 3.

(*b*) Of the 6,000,000 young people over the whole country who sought work in 1938, only 3,800,000 were wholly employed. See *ibid.*

(2) The value of a college degree is diminishing, for many do not possess the ability their degree connotes, and unemployment is almost as serious among college graduates as among the untrained.

c. Is our present educational system democratic?

(1) Education is accessible to many, for public and even private universities place few restrictions on student entrance.

(2) The student may select that institution which best meets his need or specializes in the field in which he is most interested.

(3) Most of those so smoothly classed as mediocre are profiting by higher education. See *School*

and Society, March 1936, "The Few and the Many in Education," by George E. Vincent, p. 389.

d. Are present educational methods and materials practical?

(1) Practical purposes and current problems are motivating the student in his study.

(2) Leaders are developed through associations with persons of varying abilities.

(3) Scholarly and social interests are combined to develop the well integrated personality.

(4) The development of the ability to think, and not the acquisition of facts, is the end of education.

e. The question of action on this problem has been brought starkly to the fore by three factors:

(1) An ebb in the social surge for education.

(*a*) The discovery of facts showing that our faith in the power of education has extended beyond educational results.

(*b*) Articles written on the subject by prominent educators, such as Robert M. Hutchins.

(2) The general feeling of unrest, and the problem of unemployment throughout the country.

(3) A trend toward critical analysis for the purpose of strengthening and preserving our democratic way of life, which results from conditions now existing in Europe. See *Harper's Magazine*, October 1940, "The Pre-War Generation," by Mortimer J. Adler, pp. 524-534.

2. Causes of these conditions.

a. Economic conditions have created a longer period of youth.

(1) The ratio of unemployment is not so high for eighteen, nineteen, and twenty year olds as for sixteen year olds.

(*a*) Two-thirds of the unemployed young people in every city are sixteen years of age. See Public Affairs Pamphlet, No. 22 (revised) 1940, *Youth in the World of Today*, by Maxwell S. Stewart, p. 4.

(*b*) There is no place for youth in an indus-

trialized society which requires training and specialization.

(*c*) Wages are very low in unskilled and nonprofessional fields.

b. There has been an overemphasis on going to college per se.

(1) Going to college is considered the socially correct thing to do, regardless of abilities, interests, or needs.

(2) A college education has come to be considered the most important single means of increasing ones chances for a large income.

c. There is lack of respect for nonprofessional jobs.

(1) We underestimate the importance of anything but a white-collar or professional job.

d. We have misinterpreted the democratic ideal of equality of opportunity to imply equality of abilities.

e. There is a predominance of poorly qualified and poorly prepared students enrolled in college.

(1) Sufficient provisions are not made for the discovery and development of those having exceptional ability, who lack financial opportunity.

III. Possible Solutions of the Problem (The plans suggested here may be supplemented by others which fall in between them.)

A. The first possible solution is that of limiting college admission to those in the upper quarter of the secondary school graduating classes.

1. The students selected would be those who could survive and profit from what the college offered.

a. Academic records are some indication of college success.

(1) Pettengill found that there was a relation of .64 between the percentile rank in the high school graduating class and success in college. See *School Review*, December 1937, "Status and Trends of College Entrance Requirements," by M. E. Gladfetter, p. 743.

2. The university would make a great contribution to society, under such a plan, by producing highly intellectual and well-trained minds.

a. There would be a homogeneous level of ability.

b. The reduction in enrollment would make individual attention possible.

3. These students would have a zeal and a real interest in education, for denying admission makes people want to come.
4. This strict limitation of college entrants would prevent the overcrowding of fields and the resultant professional failure.
5. High scholastic advancement and achievement would yield valuable research work.
6. Issues:
   a. Is this policy in keeping with the American ideal of extending educational opportunity to the largest possible number?
   b. Could the majority of colleges exist with the support of such a limited number of students?
   c. Would this plan encourage a class society?
   d. Can a single requirement be applied to a university made up of various colleges requiring different abilities?

B. A second possible solution would be that of adhering to the varying requirements now in existence.

1. Education under this plan would not be a monopoly of a privileged class, but a sharing of knowledge.
2. The students selected by this plan would be those whose character and personality would make them socially desirable.
3. Varying requirements will best meet the needs of the various special fields.
   a. It would be possible for those who had been refused entrance one place, to enroll in another college, to which they would be better suited.
4. Such a plan would combine scholarly and social interests.
5. Leadership would be developed in those of superior ability through their relations with people of varying capacity and interests.
6. The support of colleges and universities by large numbers of students makes possible excellent facilities and teaching staffs.
7. Issues:
   a. Would those who did not come to learn have a deterring influence on the interests and enthusiasms of other students?

b. Can high schools present the wide range of subject matter necessary to meet these varied requirements?
c. Would this plan increasingly complicate our economic situation and unemployment?
d. Does gaining admission with mediocre or poor records give the applicant a false idea of the quality of his achievement?

C. A third solution would be a reorganization of the present system of higher education, involving the establishment of junior colleges for two years of general, terminal, or pre-university training.
1. In raising the age for leaving school two more years, and giving additional training—the most serious part of the unemployment problem would be solved.
2. Such a plan would provide for socialization in the sense of adjustment of the individual students to society.
3. An educated citizenry so necessary to democracy would be developed by this program.
4. Those students who could not have additional education beyond the junior college level would be prepared to enter a vocation.
5. This plan would realize the American ideal of exploring the whole range of human capacities, inciting everyone to his highest possible level of activity.
   a. Vocational guidance and aptitude tests would be used in this program.
   b. Those students with greater abilities would be allowed to continue their education.
6. Happiness would be possible during school, as well as in later life, under such a program of self-realization and adjustment.
7. Issues:
   a. Does the dull student need at least as long a period of training as the clever one?
   b. Is it wise to separate general education from higher learning, research, and professional training?
   c. Is it advantageous for a student to leave home and come in contact with the new people and new surroundings of a large university?
   d. Would this limitation of those who continued after junior college place a stigma on those who could not?

D. A fourth possible solution is that of removing all restrictions, and allowing all to attend college.
   1. This equality of educational opportunity would be democratic.
   2. Such a plan would be especially vital at this time.
      a. President Roosevelt in a letter to Paul V. McNutt, Federal Security Administrator, advised young people to attend or remain in college, and said "We must have well-educated and intelligent citizens who have sound judgment in dealing with the difficult problems of today." See *School and Society,* August 24, 1940, "Problems of Higher Education," by Henry M. Wriston, p. 120.
   3. The true qualities and abilities of a student would be discovered by this plan, for no appraisals and grading standards are entirely reliable.
   4. Provision would be made here for varying levels of native ability, vocational interests, and all degrees of intellectual achievement.
   5. Such a plan would allow freedom for progressive education on the secondary level.
   6. Issues:
      a. Is selection after students enter (failing those of less ability) more detrimental than refusing entrance?
      b. Do crowded campuses offer any guarantee to youth of the kind of individual opportunity that is their right in a democratic society?
      c. Would all the students permitted to enter universities under such a plan have a genuine desire for education and a definite purpose?
      d. If a low educational level is established, does this prevent those with higher ability from realizing their capacities?

IV. Tentative Conclusion
   A. It appears that plan *C* would be the best solution.
   B. This plan makes intelligent provision for the many in education, and for careful selection of those who are to do advanced study.
   C. Reasons for this choice:
      1. The integrity of the individual, the center of this

program, is the factor for which democracy must provide if it is to survive.

2. Self-realization and preparation for the life work in which a person is best suited make for lasting happiness.
3. Limitation according to a student's ability, and the economic need in a profession or field will make for economic efficiency.
4. This educational program would provide adequate preparation for life.
   a. Vocational training would make it possible for those of lesser intellectual ability to earn a satisfactory living.
   b. Cultural training would be provided.
   c. Training would be given for the exercise of the responsibilities of citizenship.
5. This plan would make it possible for many high school graduates who do not go to college now, to have two more years of education.
6. Those young people who are undecided as to the field they wish to enter would have guidance, and an opportunity to "try out" their choice in the junior college.
7. This plan is practicable.
   a. It is only a variation of the educational system now in existence.
   b. This junior college plan has proved to be successful.
      (1) There are six hundred junior colleges now in existence, with a total enrollment of 200,000 students. See *School and Society*, July 20, 1940, "A Report on Junior Colleges," p. 36.

D. Disadvantages of this junior college plan.

1. This program would increase the present public expenditures for education.
2. Such a plan would be met by strong opposition on the part of private colleges and large universities now in existence.
3. Government regulation as to the number entering certain professions might be considered dangerous.
4. The emphasis of such a plan on practical education may easily lead us too far away from underlying principles.

V. Suggestions for Putting Solution into Operation
   A. The junior college system would be established and supported by the public to provide educational opportunity for all who wished to attend.
   B. These two years of college work are to be organized on three different approaches:
      1. Terminal education in certain vocational and semi-professional fields.
      2. General cultural education.
      3. Preparation for the university.
   C. Federal grants must be provided to reduce inequality of educational opportunity in the university, by supplying liberal scholarships which would tap all economic levels of society.
   D. A national board should be set up to study and survey occupational fields, establishing certain quota limits for entrance into specific fields of endeavor.
      1. Valid tests of ability and achievement must be developed in the various fields.
      2. Previous records, tests of aptitude and achievement, and interviews would be utilized to direct students into the fields for which they are best suited and have the greatest opportunity.
   E. The purpose of the establishment of this plan should be generally understood.

Participation. The basic problem involved in participation in discussion is that of getting people to express their ideas in such a way as to contribute to the thinking of the entire group. It is possible for a group of people to think together progressively and creatively, if the attitudes of those comprising the group are conducive to this kind of behavior, and if the participants know how to explain their ideas and feelings to others.

The common purpose in every discussion should be that of attempting to solve the problem under consideration. It should be an attempt honestly and objectively to search for the truth of the matter, that is to say, the solution of the problem which most helpfully integrates the conflicting factors in the problem situation. Frankness, intellectual

honesty, personal enthusiasm, and a wholesome respect for others are obviously personal attributes which are to be desired in this kind of activity.

It is of first importance, however, that this injunction to be cooperative not be misunderstood. The able participant in discussion is one who has real convictions and real feelings concerning these convictions. Some seem to have the idea that discussion is a sort of milk-and-water affair in which people exude geniality, compromise their own convictions in the interest of a superficial harmony, and spend most of their time slapping each other on the back. While there should be good fellowship in discussion, good fellowship, properly conceived, does not preclude the possibility of strong convictions and healthy, vigorous differences of opinion. Good discussion is alive, energetic, and entered into emotionally as well as intellectually.

The undesirable aspects of emotional behavior are those of emotional prejudice and bias. It is possible to feel deeply about something and still be prepared to discuss it with others fairly and objectively. If one's enthusiasm is directed toward finding a solution to the problem, rather than defending some position through thick and thin, this very enthusiasm will make an important contribution to the group undertaking. Apathy and lethargy are sometimes mistakenly regarded as signs of intellectual behavior. There is an emotional component in all vigorous thinking, and this component will be present in good discussion, manifesting itself in personal vigor, energy, and enthusiasm for the common purpose of the group.

There are several practical suggestions which may be given about the method of contributing ideas in discussion. Remember that the purpose of such contributions is to keep the thinking of the group in process, moving along, as it were, in the direction of a solution to the problem as yet unknown and unrealized. When an individual expresses his views on some aspect of the problem, it usually means that he has reached a tentative conclusion on the point about which he

is speaking. The important thing is that he explain to the group exactly *why* and *how* he has reached this conclusion.

To put it figuratively, he has traveled a certain path and seen certain scenery and reached a certain destination. His function now is to take his listeners over this same path on the assumption that they will reach the same destination. In taking them over this path he will explain what factors have entered into his thinking, what facts he has considered, what purposes have operated, and what interpretations he has made. This kind of explanation will enable his listeners to enter into his thinking in such a way that they can agree or disagree and know why they are agreeing or disagreeing. If the listener sees facts, values, or interpretations which the speaker has not seen, or if he sees what he believes to be an error or a mistake in judgment, he can point to these matters in such a way as to be understood. We know of no other way that people can really think together.

If I have reached a certain conclusion and try to persuade you to adopt this conclusion by arraying in its behalf rhetorical appeals of one kind or another, I may persuade you to agree with me, but you have not necessarily entered into my thinking, nor have I into yours. The point is that the speaker in discussion is not seeking after persuasion in this sense. That is not his purpose. He might conceivably persuade every person in the group to agree with him and still not realize the true purpose of discussion. Only as the speaker lays before the group the factors which are actually operating in his thinking and invites his listeners to scrutinize these factors can he expect to achieve what may be called "group thinking."

This advice on contributing is immediately practical and possible to any individual. All we are saying is that any speaker in discussion should make an honest effort to explain exactly *why* and *how* he thinks and feels as he does about any aspect of the problem. This method of contributing may be referred to as the *denotative* method, as it points to

the factors which are influencing one's thinking without attempting to exert any adventitious persuasion of any kind.

Assuming that the conferee makes an honest attempt to explain his position, the chief difficulty may lie in his use of language. Even though we have honesty and integrity of purpose, we may fail to accomplish an understanding because of mistaken and naive attitudes toward the verbal symbols in which we express our ideas and feelings. In Chapter 14 we present a semantic interpretation of language. There we specifically warn against emotionally toned words where they are employed to beg the question at issue, the appearance of difference and conflict which may arise from the arbitrary use of language, and the failure to differentiate meanings of words in terms of individual cases.

Leadership. The leader plays a tremendously important role in discussion. One of the more important outcomes of training in discussion should be the development of capable discussion leaders.

Obviously, nothing can be accomplished in discussion unless the members of the group are willing to contribute their ideas. With some groups this is the most difficult problem for the leader. People who have long been accustomed to passive roles in public meetings may find it difficult to participate actively. In the face of such reluctance, timidity, or apathy, whatever may be the cause, the leader's first job is to break down these barriers. One way of doing it is to present the issues of the discussion sharply and pointedly, in such a way as deliberately to stir up latent differences and to provoke attitudes which might otherwise go unexpressed. The leader here may resort to statements which are likely to challenge positions held by members of his group. Another technique is that of asking questions. These may be directed to the group as a whole or turned to specific individuals who appear to have something to say on the matter.

A third method which often helps to get response is for the leader to develop a concrete case or example in relation to the point on which he is trying to get discussion. Such a

case may be one that grows out of his own experience, or it may be purely hypothetical; in any event, it serves to reduce an abstract point to a tangible, concrete situation within the experience of the group, and toward which they may be expected to have more definite attitudes and feelings.

In addition to devices such as these, the very attitude of the leader, and the atmosphere and climate of opinion which he creates will make an enormous difference in this matter of contributing. It helps to get people acquainted and in a friendly, congenial mood. Efforts to create such a spirit of informality and good fellowship will almost always pay dividends in more lively and interesting discussion.

A second problem that the leader faces is that of giving some pattern to the thinking of the group. Good discussion is more than random talking around the problem under consideration. Analysis of an act of thought will reveal that the typical pattern is essentially the one which we explained in connection with the discussion outline: the problem is defined, analyzed, solutions are suggested, their relative merits are compared and weighed, and a tentative solution is adopted and thought through in terms of its practical application to the situation. As might be expected, essentially these same steps occur in the thinking of a group of people when the best results are obtained. Knowing this, it is possible for the leader tactfully and unobtrusively to guide the discussion in terms of this pattern.

Obviously, the first thing that needs to be done is to make certain that the group understands the specific nature of the problem under discussion. This always means that the area of discussion should be delimited, and it often means that some of the terms in the stated problem for discussion should be defined. From there the group can move on to an analysis of the problem, which is equivalent, for example, to a doctor's diagnosis of his patient. It involves an investigation of the *status quo,* the present situation. The group will want to know what, if anything, is wrong and what is causing this difficulty. Certainly, no intelligent discussion of possible

solutions to the problem can take place until the problem itself has been carefully analyzed and diagnosed. This investigation of the effects and causes of the problem, then, is the first step in analysis.

A second aspect of analysis that often escapes attention in discussion, involves inquiry into the purposes, motives, and values of the group with respect to the problem. These factors condition any possible solution to the problem just as sharply and importantly as does the casual diagnosis of the problem. For example, it will be utterly impossible for you to understand anyone's reactions to the proposed solutions unless you understand what criteria or standards of value he is using in evaluating these solutions. Let us say that you are discussing with a friend the advisability of America's entrance into a federation of English-speaking nations, and the factor which is determining all of his reactions to this problem is a firm conviction that this country should not do anything that is likely to involve it in a European war. Let us say on this same problem that your supreme value is that of preserving democracy at home and abroad. Is it not clear that you and he are very likely to disagree largely because the purposes and values which you are trying to achieve differ in this way? Now, if no opportunity is provided for him to explain his purpose, or for you to explain your most cherished hope, it is extremely unlikely that you will ever reach any understanding, to say nothing of coming to an agreement. The point is this: Personal attitudes toward social problems can be understood only in terms of the motives, purposes, and values of the individuals who hold these attitudes. These factors must be brought out into the open where they can be described, noted, and talked about. We say again that this is an aspect of analyzing the problem, and that it is one of the leader's more important duties to see that a discussion of these matters takes place.

When the problem has been analyzed, first, in terms of its effects and causes and, second, in terms of the purposes and values of the individuals participating in the discussion, then

and only then can the group move on to a consideration of solutions. This deliberation of solutions will include the suggestion of possible methods of dealing with the problem, and a careful consideration of the relative merits and demerits of these different proposals in relation to the nature of the problem as analyzed. The proposal which emerges from the thinking of the group quite conceivably may not have been in the mind of any member at the outset. There isn't the slightest reason why a group of informed, intelligent people, thinking and conversing together, cannot hope to think in a way that is genuinely creative. Whatever solution emerges from the thinking of the group should then be given a thorough going over in relation to the very practical problem of putting it into operation. Will this proposal work? What difficulties are likely to be encountered in getting it accepted? What steps should be taken to secure its endorsement? Questions such as these should be the final consideration of the group.

We have gone into this pattern of group thinking in some detail because an understanding of it is vital to good discussion. Knowledge of this pattern is an important part of the leader's equipment, and one of his more important responsibilities is to see to it that the group is given an opportunity to go into these different aspects of the thought process.

Closely related to this matter of the pattern of the discussion is a third responsibility of the leader, that of giving movement to the discussion. In the group thinking process there will always be those who will wish to press ahead prematurely before a point has been adequately canvassed by the group, and there will be others who persist in talking about the same thing long after the discussion of the point has ceased to be productive. The duty of the leader here is to strike a balance between these two extremes. In doing so he must consider the adequacy of the discussion and the total time available to the group. The best way to move a group on to other matters is to interpolate questions which invite the consideration of new points. The best way

to prevent the group from rushing ahead too rapidly is to use questions, to probe into aspects of the matter which they are about to leave unconsidered. Another technique which will serve the discussion leader well in this connection is the ability to summarize phases of the discussion tersely and succinctly. A good summary will indicate what has been done and what remains to be done. One of the happiest faculties in any leader is the ability to listen to discussion and to draw from that discussion an accurate statement of what the developing conclusion of the groups seems to be. Such statements not only serve to give movement to the discussion, but also give the group satisfying evidence that some progress has been made.

We have said that good discussion cannot proceed in the absence of the facts of the case. It is the leader's responsibility to see that these facts are made available to the group. It is fair for the leader, or any member of the group, at any time to ask for the facts upon which statements have been made. If these facts cannot be provided by members of the group, the leader may assist them if he has some information on the point. In some instances experts may be invited to sit with the group for the purpose of clearing up factual questions which the group is unable to handle for itself. In extreme cases it may be necessary to postpone the settlement of certain points and to appoint a committee to go out and get the facts on this matter. In any event, little can be gained by talk which is uninformed. It is stupid to expect that real problems can be solved in any significant way by people who are ignorant of the facts relative to such problems.

A final function of the leader is to deal with conflicts and differences which arise in discussion. We have already said that differences of opinion are to be expected in good discussion. As a matter of fact, discussion consists very largely in coming upon such differences and in attempting to resolve them constructively. Discussion will normally proceed from one difference of opinion to another, with such differences

serving as the focal points of the discussion. In order to resolve these differences, the leader must understand what is producing them. There are about four possible causes: first, different facts or misunderstanding concerning facts; second, different values or purposes, or a misunderstanding concerning these values and purposes; third, different interpretations of facts and values or a misunderstanding concerning interpretation; and fourth, personal prejudice, stubbornness, or animosity of one kind or another. Of these four causes, the first three are legitimate and may be expected to operate in intelligent discussion among informed people on almost any controversial subject. The fourth cause, involving as it does personal differences, is really extrinsic to the problem *per se* and is inimical to good discussion.

Whenever a difference of opinion exists, it is the leader's function to inquire into the facts, values, and interpretations of those whose opinions are in conflict. If a discussion of these matters does not result in an agreement, it should at least enable the group to see what is causing the difficulty and provide a basis for an understanding and appreciation of the opposing points of view. If the consideration of these matters makes it clear that the conflict is in the realm of personalities rather than in the realm of ideas, the leader then faces the alternative of passing on to other matters or attempting to soften the conflict as tactfully as possible. In any event, he should not permit a purely personal wrangle to disrupt the discussion.

In relation to this matter of conflict and difference, we wish again to point out that disagreements may often be largely verbal rather than real. In listing the causes of conflict, we have in each case indicated that the difficulty may be in misunderstanding. To the extent that the cause lies in verbal confusion, we suggest that some remedy may

be found in the semantic factors which are discussed in the last section of Chapter 14.

Four approaches to discussion

The four approaches to discussion which we present here are in each case an application of the methods considered in the previous section. Each, however, is designed to adapt these methods to special situations.

The problem-solving approach. Little needs to be added about the problem-solving approach because it is a direct application of all that has been said thus far. It is the most normal and natural method under most circumstances. To the extent that discussion has an application in policy-determining groups, it is the method which is always used. For purposes of learning groups as well, it is usually best to discover the problems in the area in which the group is interested, and then organize discussion around these problems.

The case method. The case method is a simple variation of the problem-solving approach in which some specific case, actual or hypothetical, is used as the basis for the discussion. The question for the group to decide, then, is what should be done in this case, or what is the explanation of the case. An interesting example of this method is provided by an enterprising leader who was conducting a discussion on juvenile delinquency and ways of handling it. To start the discussion he showed an educational motion picture which told the story of a family in Chicago's slums and showed how the children in this family were led to lives of crime and immorality. The picture presented an actual case which stimulated discussion, invited the consideration of other cases, and thus served to open up the entire problem. The leader may plan such cases and present them verbally to the group. The method is especially useful where it is difficult to get participation, because it provides something specific and immediate to talk about.

The critical approach. Very often it is profitable for a learning group to study critically some book, motion picture, or magazine article. The question is often asked: How can the discussion method best be applied in this case? One way, of course, is to phrase the central problem which is treated, and then to discuss this problem in relation to the book, picture, or article in question. In preparation for the discussion the group may be asked to read the article and to phrase the specific problem or problems raised. The first task in the discussion, then, will be to determine the problem which the author is getting at. From there the group may go on to consider the analysis and the solution suggested by the author. The facts, values, and interpretations of the writer may be criticized in relation to the views of others, and examined in terms of all of the information available to the group. In this way the point of view and the reasoning presented in the article can be submitted to the most vigorous and searching kind of critical examination.

The developmental approach. In some instances the purpose of a learning group may be the mastery of a given field of knowledge or information concerning some special process or skill. It is in this kind of situation that the lecture method is most frequently used, and in some cases it may be more economical of time and effort than any discussion approach which can be devised. The reporting of "knowledge" may involve a consideration of facts, values, interpretations, and appreciations. To the extent that values, interpretations, and appreciations enter in, it is likely that some discussion of these factors will be of value. Even a good lecturer will ordinarily entertain questions and will often welcome some discussion of points which are not completely clear. If a developmental approach is used entirely, a series of problems may be set up and so planned that their discussion will bring out the information which needs to be presented; or the leader may provide an outline of the field which can be developed through outside reading and through discussion of the points in the outline in relation to this reading.

Conversation

Up to this point in this chapter we have been considering discussion as the relatively serious business of attempting to solve real problems through the reflective thought and cooperation of a group of people conversing together. Such conversation is discussion. It is, of course, obvious to all of us that conversation may be used under different circumstances for very different purposes. We shall be interested here in the values of conversation in a social situation, for the purposes of entertainment and good fellowship. While we should also be interested in these same values in the kind of conversation which we have called discussion, the point is that they are secondary to the more immediate purpose of solving problems.

In our remarks about discussion we emphasized the importance of the kind of preparation which comes from regular reading habits. Good social conversation is probably even more dependent than discussion upon the general background of the speaker and upon other relatively intangible factors which cannot be reduced to methods or prescribed techniques. A good conversationalist is an interesting person who has interesting things to say and who has considerable skill in expressing himself easily and fluently. There is much to be said for the position that these factors are pretty largely a function of the total education and experience of the individual. Granted that this is the case, it is possible to offer a few suggestions which may be helpful to the individual in carrying on social conversations.

What to do in conversation

Probably the first and most important rule in good conversation is to give the other fellow a chance to talk about things which are of interest to him. As a matter of fact, if you are the host, it may be necessary for you to create such opportunities. This principle is absolutely fundamental. It is axiomatic that if your guests are going to like to talk at

all, the conversation must be about things which are of interest to them. Unless these subjects come up normally and naturally, you may be able to save a difficult situation by bringing them up yourself. Certainly you should not force the conversation by persisting in talking about your own interests to the exclusion of those of others. Such a performance may provide a monologue of sorts, but it is hardly fair even to call it a conversation.

Good conversationalists understand very well the value of being able to ask questions. The question may call for information, or it may even request an opinion on a certain matter. In any event, it makes a request which is very difficult to ignore, especially if it is directed to a particular individual. Such questions may be used to draw out people on the topics in which they are interested. They encourage conversation because they indicate an interest on the part of the questioner in the matter about which he is inquiring, and they encourage the answerer by giving him reason to believe that what he has to say will be appreciated. A question calling for an opinion is an indirect compliment to a person, because there is a tacit assumption that his opinion on this matter is of some interest and consequence.

One who is competent in conversation usually also has the faculty of finding in the talk of others, ideas which he may use as leads or spring boards to new subjects of interest. These transitions do not have to be made with a great deal of regard for a logical sequence of ideas, but rather for the purpose of breaking new ground and opening up new areas of interest. Entertaining conversation does not have to proceed in a straight line, nor is there any particular reason why it should be accommodated to any cut and dried sequential pattern. The point we are emphasizing here is the faculty of seeing in the talk of others, suggestions and cues which may provide the basis for further conversation.

A good conversationalist is also a good listener. This has probably been implied in what we have already said, but it will bear special emphasis. Nothing is much more enervat-

ing in a conversation that an apathetic audience, or an audience which leaves you with the impression that they are bearing with you only for the purpose of shutting you off and seizing the opportunity of doing the talking themselves. Almost any talker will warm up to his subject if he is given the encouragement of an appreciative audience. The business of listening constructively is as much a part of good conversation as is stimulating talking.

Those who are at ease and at least give the appearance of enjoying themselves, and they only, make good conversation possible. It is really an amazing social phenomenon that one constrained, inhibited, nervous individual can almost completely freeze a group of considerable size. Especially is this true if this individual is a guest of honor or someone to whom some attention must be paid. Mark Twain tells about such a situation. He was one of several guests at the home of a brilliant and versatile talker, noted for his gracious hospitality. The occasion was a dinner in honor of a visiting celebrity. A veritable galaxy of brilliant and highly vocal individuals had been assembled for the occasion. It was planned that each of the guests was to speak briefly following the dinner. He tells how horribly the conversation bogged down during the dinner, largely because the guest of honor, despite his literary distinction, was obviously ill at ease. This group of very gay people who had met together so many times before were almost completely unable to rise above the nervous stodginess of their distinguished guest.

It will not be necessary for us to give here the detailed account of the almost complete collapse of the after-dinner speeches which followed. Suffice it to say that the story supports what we are saying here about the peculiar difficulty of carrying on conversation in the presence of self-conscious people. It is difficult for us to do much more than to describe this phenomenon and to urge the importance of easy congeniality as the atmosphere for good conversation. We present the problem on the assumption that an awareness of it may be of some assistance in coping with it. Certainly

sincere, candid, self-possessed people make the best conversationalists.

What not to do in conversation

It follows from what we have already said that one of the things not to do is to monopolize the conversation. This injunction, of course, takes us right back to the importance of developing an awareness of the interests of the other members of the group, the faculty of opening up these areas of interest, and the ability to listen while other people are talking.

In social conversation it is also wise not to argue much. If the purpose of conversation is chiefly that of providing a pleasant and stimulating occasion for the group, then little is gained by proving beyond the shadow of a doubt on each and every subject that is discussed that your friends are completely wrong and misinformed in their views. Even though you may think that such is the case, it is probably the better part of courtesy, if not of valor, to take some other occasion to correct all of these misapprehensions. There is a bare possibility, too, that *you* may be wrong on some of these matters and that you should, therefore, condescend to give your friends the benefit of the doubt. The man who is thoroughly and completely downed in an argument is almost never happy about it and rarely convinced. The inveterate arguer usually succeeds in alienating one person after another with the result that the very purpose of the conversation is defeated.

Lest we be misunderstood on the advice which we have just given to the arguer, we hasten to add that no less objectionable is the person who blandly agrees with everything that is said. All of us know the type. He is the individual who has had limited contact with matters of any real importance and thus finds nothing incongruous in displaying boundless enthusiasm about mere trivia and utterly inconsequential matters. Having no opinion on important questions,

he is likely to agree enthusiastically with almost anything that is said on any problem.

It would be possible for us to devote many pages to descriptions of the kinds of people whom, for one reason or another, we do not like in conversation. Perhaps enough has been said, however, to indicate that frankness and sincerity, joined with a measure of tact, sympathy, and interest in the points of view of others, are the desirable qualities in good conversation.

Exercises

We suggest that students begin with speech in the face-to-face situation, proceed from there to public discussion, and thence to public speaking and debating. This sequence provides an approach to original speaking which is sound, both logically and psychologically.

1. *Round-table discussion.* Divide the class into groups of ten or twelve. Assign for discussion a problem of local or school policy which is close to the experience of the group, one that does not require much library preparation. Ask each person to think this problem through and draw up a brief discussion outline to be submitted to the instructor. Appoint student leaders. Conduct the discussions in face-to-face groups.

The instructor or an appointed critic should keep a running record of the number and quality of the contributions by each member of the group. The pattern of the total discussion should be observed and attention given to the work of the leader. The emphasis should be placed upon free, spontaneous, uninhibited speaking, and upon adequacy of ideas.

2. *Speaking in discussion.* Repeat Exercise 1 with new problems for discussion. This time pay particular attention to the speech of each individual. Consider voice and diction as well as directness, sincerity, and general effectiveness in communication. Also notice the nature of the contributions in relation to suggestions on participation in this Chapter. Some record may be kept of what appears to be the problem of each student, as a basis for later exercises.

3. *Leading discussion.* Repeat Exercise 1 with the following variations: Assign problems of state or national policy. Ask for discussion outlines which give evidence of careful library investigation. If necessary, discuss the use of the library and provide

some bibliographical material on the problem. Request each member of the group to be prepared to lead the discussion. Change leaders at convenient intervals during the course of the discussion. Ask each new leader to summarize the discussion in a few sentences when he begins.

Consider especially the techniques and methods of leadership in the criticism. Criticisms developed in previous exercises may profitably be noted and followed up in this assignment.

4. *Additional exercises.* The section of this chapter on the four approaches to discussion may be used as the basis for additional exercises. Especially adapted for class use is the "critical approach." Assign some stimulating, controversial article in a magazine such as *Harpers* or the *New Republic.* Use this article as a basis for class discussion.

CHAPTER 11

Reading Aloud

Reading aloud is a commonly used form of speech in which the basic communicative arts, speaking, reading, and writing, all play important parts. Broadly defined, it is speaking in which the meaning has been given complete and explicit expression in language prior to the occasion for speech. The reader may use language he himself has written, but more frequently he presents the words of another. He may draw his language from a page actually before him, or he may draw it from material he has committed to memory. The distinguishing characteristic of reading aloud is the necessity of translating written or printed language symbols into appropriate visible and audible speech symbols.

Oral reading is a particularly effective way of enjoying literature and of sharing that enjoyment with others, but it would be a mistake to suppose that it is used solely, or even chiefly, for this purpose. A student reading the account of some recent sporting event to a friend over a cup of coffee, a lecturer delivering a carefully memorized account of his travels, a scientist presenting a paper before a group of his colleagues, the President of the United States reading a speech over an international radio hook-up on an occasion of world-wide importance, a high school sophomore declaiming in some contest, a teacher interpreting a poem to a class, an actor thrilling a theatre audience with the lines of a great play; all are using the techniques of translation involved in reading aloud. A great deal of what is generally called "speaking" is, in reality, reading. The ability to read aloud simply, directly, intelligently, and with force, is an asset to anyone today, no matter what his personal or professional interests may be.

For anyone of college age, skill in oral reading is based upon skill in silent reading and skill in speech. Everything the student knows about mental processes—both intellectual and emotional—about language, and about the psychology of speech situations will stand him in good stead. If his skills in silent reading and in speech are already excellent, he need master only the techniques of combining these skills until they can be used simultaneously. Most individuals find, however, that they do not have sufficient skill, either as silent readers or as speakers, to be really effective oral readers. For such persons, general development of reading and speech skills is necessary. Fortunately, reading aloud is one of the best methods of developing these skills. The practice afforded in the use of language, voice, and bodily activity leads to general improvement while establishing the special techniques of reading.

We first use oral reading as a process by which we learn to read silently. Much of our time in the early years of school is spent in associating the new written or printed symbols with the audible symbols we already know. Reading aloud is the path by which we are first led into the world of print, which later becomes such an important part of our environment. By the time we become adults, most of us have forgotten that we ever had to read aloud in order to read silently, but in moments of difficulty we still turn to early habits. Everyone is familiar with the experience of reading a particularly troublesome sentence, paragraph, or stanza aloud in order better to understand it. Frequently, too, we read aloud to ourselves for the sheer enjoyment of hearing and feeling the author's words as we utter them. Ordinarily, however, reading aloud presumes an audience, or at least a hearer.

Reading aloud is used as a method of presentation when, for any reason, the precise wording is of importance. In conversation and in extemporaneous speaking, the speaker formulates his language as he goes along. He may have prepared his ideas in advance, but he does not feel it necessary

to express them exactly in language prepared in advance. In certain situations, however, an exact wording is essential. The subject may be so complicated that the aid of written language is needed. The occasion may be such that the speaker cannot risk an inadvertent slip in expression. Sometimes a more careful, dignified, or elegant style than even gifted speakers can be sure of commanding extemporaneously may be desired. Perhaps the situation is one in which the presentation of literature is appropriate. Here the words of the author and their particular arrangement are part of the literary form and an indispensable element in the meaning. It may be that split-second timing is imperative, as in radio. In situations such as these, reading from the page or from memory is used.

The Basic Problem: Getting the Complete Meaning

Thoroughly good reading, either silent or oral, is relatively rare, even among college students and graduates.[1] The chief reason for the poor reading which prevails generally is the failure to get the *complete meaning* of a passage, poem, or book. Words are slighted, logical relationships are missed, implications are not seen, imaginative and emotional elements leave the reader unresponsive. Emphasis on too rapid silent reading, with the skimming habit it engenders, and failure to recognize reading as an active process, requiring alert, strenuous effort cause poor oral reading. The lack of intellectual curiosity, and weakness in the imaginative and emotional response to what one reads are also recognized as causes of the widespread inability to read well. The first task of the prospective oral reader is to make sure that he has a thorough understanding and appreciation of the complete meaning of what he is going to read.

[1] Adler, Mortimer J., *How To Read A Book*, pp. 65-100. New York: Simon and Schuster, 1940. Clark, S. H., and Babcock, Maud May, *Interpretation of the Printed Page*, pp. 382-390. New York: Prentice-Hall, Inc., 1940 Parrish, Wayland M., *Reading Aloud*, pp. 12-17. New York: Thomas Nelson & Sons, 1932.

Recognizing the problem

The initial step in an intelligent approach to the problem of getting complete meaning is to recognize the nature of the problem itself. Until this is done the reader cannot know what his chief difficulty is likely to be and what steps he needs to take to solve it adequately. Various types of material present various difficulties. It is only common sense to recognize what they are before attempting to meet them. Material may be difficult because its intellectual content is profound or complicated. It may demand unusual imaginative or emotional response. The chief difficulty in a selection may be a linguistic one. Its form may be the element that requires most careful attention. It may be necessary to become familiar with the time and the circumstances under which it was written before its point of view can be adequately understood. The ideas or sentiments may be so foreign to the reader's general experience that he must readjust many of his habitual patterns of thinking and feeling before he can even see what the author is trying to get at. If the reader fails to recognize the nature of the problem, he will waste much time and effort and may never solve it, merely because he is not aware of its existence. The first readings of a selection should be in the nature of a scouting trip on which the reader maps out promontories and valleys, objectives that must be reached, roads that are easy, and terrain where the travel will be slow and arduous.

Recognizing the author's purpose

Broadly speaking, the author's purpose will be (1) practical, (2) theoretical, or (3) artistic. He will be chiefly concerned with explaining how a thing can be done, why it should be done, and in getting people to do it. Or the author will undertake to explain the nature of things in the interest of abstract truth. Again he will endeavor to bring enjoyment to his readers by giving significant form to selected portions of human experience. The reader needs to recognize what the general purpose of the author is, not only in

studying a long work, but also in mastering a shorter selection. Frequently the purpose of the author is unmistakable. Frequently, too, however, it is not at all clear. Much of the practical has been disguised intentionally or unintentionally under the cloak of the theoretical or the artistic, and many an artistic or theoretical purpose has been misunderstood because people insisted on reading into it a practical implication that was not intended by the author.

More specifically, an author's purpose can be classified in the same way as a speaker's purpose. That is, he will seek (1) to instruct or to inform, (2) to convince, (3) to persuade or actuate, (4) to impress, or arouse strong emotional response, (5) to entertain. Just as the intelligent listener needs to recognize what the speaker is trying to do and why he is trying to do it, so the intelligent reader needs to catch the purpose behind the printed page.

These general purposes will, again as in speaking, be reduced to much more specific intentions. The author may want the reader to be informed on a certain fact or principle, to be convinced of a specific truth, to perform a definite act, to experience a particular emotion for a particular effect, or to be entertained by a definite situation or by a particular portion of significant form. Each of the various purposes may be used in conjunction with one or more of the others, but one will be primary. The reader must recognize generally and specifically what the author is trying to do. Sometimes explanation is the best way of convincing, or perhaps an attempt at persuasion may be thoroughly entertaining, or arousing strong emotional response may be the best method of securing a powerful artistic effect. The function of each possible purpose must be understood.

The author's method

Speaking most generally, the author may seek to accomplish his purpose primarily by appealing to the intellect or by appealing to the imagination and emotions. He will present facts and principles bound together by causal rela-

tions, or he will present images and figures rich in associations. In other words, his method will be predominantly either that of prose or that of poetry. This is, of course, a very broad distinction. Much prose is rich in imaginative and emotional content, and no poetry worth the name is without intellectual content. Prose and poetry, as generally understood, do, however, represent different approaches to experience, separated by the emphasis on the conceptual and cognitive processes as opposed to those of sensation, imagination, and emotion. Prose asserts and supports by facts and relationships which can be *understood.* Poetry asserts and supports by suggestions which can be *felt.* The reader should at least recognize that it is not external form alone which marks the difference between the two methods. He must not react too literally to material which is intended to be figurative and suggestive. He must also not respond poetically to material which must be taken literally if its real significance is to be grasped. Language is far more poetic than is generally realized, even when it occurs in the most matter-of-fact prose. One cause of confusion in reading is the failure to catch the figurative quality of a word or expression when it is used in an apparently quite literal sense. The reader needs to know whether he is reading prose or poetry, whatever the external form may be.

Within the broad general method he chooses, the author may have occasion to inform, to explain, to describe, to narrate, to assert, to argue, to reason, to imply, to suggest, and to dramatize. The time honored rhetorical divisions of exposition, description, narration, and argumentation are broad divisions of literary method. The various literary forms—essay, lyric, short-story, biography, novel, ballad, dramatic monologue, play, and so on—are special methods for accomplishing desired effects, each with a set of more or less generally accepted conventions of its own. The reader is helped greatly by familiarity with the purpose and conventions of each of the various forms. He should at least recognize the method which is being used at any given time, together with

the reason for its use in relation to the general purpose. This recognition is necessary not only for an understanding of the meaning, but also as a guide to the appropriate expressive technique which should be used.

The dominant unity

Every well-written composition has a dominant unity, a single, main impression which the author wishes to establish, or a purpose which he wishes to serve and to which everything else is subordinate. As quickly as possible, the reader should determine what this dominant unity is, for it is only by recognizing it that he can evaluate the whole. The dominant unity may be a general idea or theme. It may consist of a specific, logical proposition. It may be a mood, an attitude, or an emotion. Sometimes it is a character. It may be nothing more than a situation. Whatever it is, the reader should recognize it and respond to it constantly as he reads. If it is explicitly stated by the author himself, its recognition is, of course, easy. Frequently the problem is more complex. The dominant unity must be inferred from what the characters say or do, or from the general organization and structure of the material. The reader must be alert for every sign that points to the single response which the author wants the reader to carry away with him as the most important element of the composition.

The reader must recognize, too, just what the nature of that response should be. Sometimes the central idea or the main proposition must be explicitly stated in its logical entirety before it can be adequately grasped. Sometimes the chief characteristics of the mood, attitude, atmosphere, feeling, character, or situation can only be described. It is an error to attempt to reduce every type of material to the logical exactness of a legal brief. Much imaginative literature may be ruined if this approach is used. It is also an error to be vague about what the author is driving at merely because the main element of the whole composition has been missed. The reader should check his grasp of the dominant

unity by expressing it in writing. State it in a logical proposition if the nature of the material permits. Give a succinct description of its essential characteristics if it cannot be reduced to logical expression. The proposition or description should include all the essential elements contained in the dominant unity.

In a foreword, introduction, or preface, or by the title he chooses, the author frequently gives a clue to exactly what he wants the reader to get. The reader should cultivate the habit of reading all introductory material carefully and of considering the possible significance of the title. By doing so he may find that the question of dominant unity is settled for him before he undertakes the reading of the material itself. Surprising as it may seem, many readers completely overlook this obvious aid to getting at the central significance of the material they are reading.

Recognizing the structure

A whole is usually composed of parts, and the effect of the whole is to a large extent determined not only by the nature of the parts but also by the relation they bear to one another. In addition to grasping the dominant unity, the reader needs to recognize the structure underlying his material. This is particularly important if he is reading a selection from a longer work. He needs to know what issues the author is attempting to meet, what problems he is trying to solve, what incidents he is presenting, and what facts, principles, or happenings are of key importance in creating the dominant unity. In short, the reader needs to be able to follow the main line of the argument, appreciate the setting, or recognize the plot. Again he should turn to writing to help him check his grasp of the material. In some cases he will want to make a logical outline; in others he will want to make a synopsis of the plot. In any case he should be sure that he knows the main elements and why they are important in relation to the whole.

Mastering the Details

Words

With the author's purpose, method, dominant unity, and structure understood, the reader is ready to give his attention to the details of his material. His first consideration should be words.

It may seem too obvious to need mention that the meaning of language cannot be completely grasped unless the full significance of the words used is understood and appreciated. And yet there is no detail in the process of reading that is more generally slighted by students. Words with unusual meanings, familiar words used in an unusual manner, figures of speech, and names of persons and places are passed lightly by, even when the reader must know that every word missed leaves a blank spot in meaning. One of the first techniques that the prospective oral reader should develop is the prosaic but thoroughly useful "dictionary habit." Looking up words the complete meanings of which are not absolutely clear, should become a matter of course.

The dictionary alone will not be sufficient in a good number of cases. It can give the denotative, or logical, meaning; the connotative meaning, often the most important aspect of the word, the dictionary cannot always supply. Connotative, or associational meaning, is derived largely from the reader's own experience. If that experience is insufficient, the meaning may escape him. Frequently full associational meaning comes only as a result of increased personal experience with life and with literature.

The reader should bear the symbolic nature of words constantly in mind. Words mean nothing in themselves. It is the response they awake in us that is important. They are not things, or acts, or attributes, or relations. They are merely signs which make us respond so that we become aware of these various elements in experience. Sometimes a word stands for a literal object or act. Sometimes it is a name for a class of objects or acts. Sometimes it merely suggests a striking attribute of some object or act; that is, it is used

figuratively. The reader should be careful to think through or to feel through the word to the actuality for which it stands. He should, in other words, make sure he is aware of the referent.[2] Much confused thinking results from a failure to ascertain the referent, and much ineffectual reading results from the reader's inability to reconstruct vividly the reality which the author is portraying. The habit of taking time to examine the referent carefully will not only increase intellectual grasp of content, but will also promote vividness of imaginative and emotional response.

Word groups or phrases

When we speak, we combine words into groups, or phrases. These groups constitute the unit of meaning. Each contains a key word which expresses the most important portion of the idea or image to be communicated, and other words which modify the meaning of this key word. Good reading necessitates the discovery of the meaning of each phrase and the relation the phrase bears to the context which has preceded and to that which follows.

In translating written language symbols into speech, we vary the length of the phrase in accordance with the difficulty of the material, our control over our breathing, the size of the room in which we are speaking, the type of effect we wish to secure, and the like. There is no hard and fast rule which can be applied. One phrase is set off from another by a pause. These pauses serve as vocal punctuation and are extremely useful in letting the hearer know just how significant the particular phrase is. They may be of just sufficient length to be noticeable, or they may be long enough to give dramatic emphasis by creating suspense. Skillful use of the pause is a speech technique of particular importance to the reader. Grammatical punctuation may at times be a help in determining the meaning of phrases and how they

[2] Chase, Stuart, *The Tyranny of Words*. New York: Harcourt, Brace & Company, 1938. An interesting general discussion of the importance of the referent for sound reading and thinking.

should be punctuated orally. It is often no more than a convention of printing. The reader cannot wholly rely on it, but must determine his grouping according to the meaning of the words and their context.

Phrases should be spoken so that the key word stands out as important and its relation to other key words is indicated. This is a problem of expressive technique, but the devices necessary to make phrasing significant to the listener can be employed to advantage in the study of the meaning. Reading a passage aloud in such a way as to make the meaning and relation of phrases clear is one of the best ways of testing one's own understanding and appreciation of what the author is saying.

Imagery

The meaning of much writing lies chiefly in the images which are invoked. Many readers who are quite skillful in getting denotational and conceptual meaning find that they are less successful in getting vivid imaginative responses. Our ability to respond fully to image-invoking language is partly a matter of physical endowment. Different individuals have different types of predominant imagery and different degrees of image vividness. It is also partly a matter of training. The student should do what he can to develop his power of imaginative response. The reading of poetry is one way of doing this, for poetry is rich in all kinds of imagery.

Rhythm

Along with the development of imaginative responsiveness, the student should cultivate his sensitivity to rhythm. Some of the subtlest nuances of meaning are secured by changes in rhythm. Individuality in speech is to a considerable degree the result of differences in bodily rhythms. Our habitual language rhythms are closely related to the customary tensions and relaxations of our own bodies. Every author consciously or unconsciously writes in a particular

rhythm. In poetry the matter of rhythm is of tremendous importance, but in all forms of writing, rhythm is an important element in meaning. The reader should not overlook this fact. He needs to have a cultivated sense of rhythm in order to get meaning, just as he needs to have control of rhythm if he is to express meaning well.

Extrinsic Aids in Getting Meaning

Frequently it is impossible to understand or to appreciate a selection fully without recourse to some outside source of information. It may be necessary to understand the events of an author's life, or his relation to the affairs of his time, or his general philosophy, or the particular circumstances surrounding the writing of the selection. Frequently, too, it is helpful to understand the effect the writing has had, the responses it has aroused in others, what has been said about it. The reader may need to supplement his study of the material itself with a study of the author and his other works, with biography and criticism. Such study will direct his attention to important meanings he might otherwise overlook and will help him to evaluate troublesome portions. He should be careful, however, that it does not become a substitute for reaction to the material itself. The reader's response should be a first-hand one. *He should get his meaning from the material, not from what somebody has said about it.*

Importance of Reader's Own Experience

Fundamentally we all can read only in terms of our own experience. If the student is familiar with the psychology of perception, he will see how this statement is necessarily true. Kerfoot's frequently quoted passage will stand repeating.

> We read, then, quite literally, with our own experience. We read with what we have seen and heard and smelled and tasted and felt. We read with the emotions we have had—with the love

we have loved, the fear we have feared, the hate we have hated. We read with the observations we have made and the deductions we have drawn from them; with the ideals we have built into them; with the sympathies we have developed and the prejudices we have failed to rid ourselves of.

"Learning to read" in the common-school sense—learning, let us put it, to *read print* and learning to read handwriting—has exactly as much (and exactly as little) to do with our reading of a novel as it has with Forbes-Robertson's "reading" of Shakespeare.

Learning to read, in the real sense, means enlarging our equipment, and learning, creatively, to use it.

We *receive* in reading; but we receive, not directly by what the author tells us, but indirectly, by the new uses that he stimulates us into putting our experience to.

For reading consists of our making—with the aid of the pattern and the hints supplied by the author, but out of *our* mental stock, which we have produced by living—something that never existed before; something that only exists at all in so far as we make it; something that can never be duplicated by any other reader; something that we ourselves can never wholly reproduce.

Reading is a co-partnership. What we receive from it is in the nature of dividends on a joint investment.[3]

In order to be sure of getting complete meaning from what he reads to himself, a reader should constantly enlarge his equipment of experience, real and vicarious. In reading to others, true understanding is his best assurance of increasing his power to communicate significant experience from a printed page.

Expressive Techniques in Reading

Since reading aloud is a form of speech, it is obvious that all the techniques of speech play a part in the successful interpretation of the printed page. Everything the reader knows about the mechanics of speech and every skill he has acquired will be useful.

The reader must be objective; that is, he must think in terms of how his audience will respond to the techniques he

[3] Kerfoot, J. B., *How To Read*, pp. 20-21. Boston: Houghton Mifflin Company, 1916.

uses, and then adjust his techniques in terms of that response. He must want his audience to respond in a certain way. Development of the communicative attitude is a complex matter. It involves confidence on the part of the reader and a sense of friendly control over the thoughts and feelings of his listeners. To a large extent it is a matter of personal growth, based on experience.

When the material to be read is no more complex than the language, ideas, and emotions to which the reader and his audience are generally accustomed, and when the situation is an ordinary one, the problem of reading aloud is relatively simple. It is nothing more than keeping the process of translating one language code into another from getting in the way of spontaneous, communicative expression.

Good reading, even on this level, is surprisingly rare. Too frequently the whole process of speaking changes as soon as the page is introduced or memory is invoked. The speaker ceases to talk and obviously begins to "read" or to "recite." Even if his speaking does not become dull and lifeless or artificial and exaggerated, it often tends to lose all directness, all sense of communication. He glues his attention on the page or retires behind a fixed-focus glance, apparently quite oblivious of his hearers. Or he may betray in every movement and gesture, and in every intonation of his voice, that he is mechanically repeating speech patterns that have been practiced until they have become automatic. At an opposite extreme is the speaker who is so busy getting for himself the meaning from the page that he has no time to think of communicating it to others.

The chief mechanical device by which we maintain directness with an audience is the eye-to-eye contact with key members. Frequently, in large audiences, the contact is more of an illusion than a reality, but it serves its purpose both with the speaker and the audience. The communicative attitude it engenders is maintained. In many reading situations the reader establishes direct eye-to-eye contact as the speaker does. One of the simple mechanical skills of oral

reading is that of maintaining eye-to-eye contact in spite of the necessity of referring to the page. This can be done by being so familiar with the material that a quick glance at a phrase or sentence will be enough to enable the reader to recall the meaning and the wording. Advantage can be taken of the pauses to turn to the material. The reader must, however, be fully aware of the meaning of what he says at the time he says it. If he is not, his reading will be mechanical and relatively meaningless.

Awareness of meaning, plus desire to communicate, will do much to give reading the characteristics of conversational speech. The desire to communicate is really more fundamental than any specific single technique. Inexperienced speakers and readers who avoid eye-to-eye contact with their audiences do so largely because they are so ill at ease in the social situation in which they find themselves that they have lost all real desire to communicate. When one actually wants an individual or a group to get his ideas and his feelings, he almost automatically looks them in the eye to see whether he is being successful in arousing the responses he desires. We are so accustomed to this type of behavior that we expect it, and when some suitable reason is not apparent, we are bothered when it does not occur. The reader, like the speaker, should cultivate his ability to maintain eye-to-eye contact with his audience. This is partly a matter of sheer mechanical practice. The eye can be trained to take in long phrases quickly and to find the place readily, so that the overt process of getting the language from the page will interfere as little as possible with direct communication. The written language should be translated into the bodily and vocal patterns of one's own conversation. A good exercise is to present some of the ideas in one's own words, then read, keeping the tone quality, rhythms, and inflections the same. The student should practice these techniques until they are automatic. Simple as they may seem, they are basic skills which many experienced speakers lack.

Many reading situations are, of course, not so simple as the

type we have been considering. The ideas and emotions depicted by the author may be extremely complex, far removed from commonplace or ordinary experience. The language may present special difficulties. Written language is usually less immediately intelligible than daily speech. More unusual words are used; the sentence structure is apt to be more involved; and there is more subtlety in style. The writer has time to weigh every word before he puts it down, to search carefully to find the phrase or figure that best expresses the exact shade of meaning he wishes to convey. Logical relationships, concepts, images, all are expressed in closely knit language. Frequently meaning is carried at least as much by implication as by explicit assertion. The reader may find he must give his material careful study in order to grasp its most significant elements. The greater the writer, the more he has to say and the more variously he will say it. The masterpieces in any field do not wear their meanings on their sleeves.

The reader may find, too, that expressive techniques which serve adequately for ordinary, routine speaking situations are not sufficient to meet the demands of the material or to satisfy the expectations of the audience. The occasion may be such that the speech techniques themselves must be raised to an artistic level, that is, one on which they will give pleasure as well as serve as means of communication. The reader may become sharply aware of a lack of real bodily and vocal control, of unresponsive muscles and flat, strained, colorless voice. When reading demands improved ability in understanding, appreciation, and expression, it becomes most worth while as an instrument of personal development and growth.

The reader needs to be able to meet the requirements of the material and the audience, for, after all, the purpose of reading aloud is to do for others what they cannot so effectively do for themselves. His listeners may not have had the time nor the opportunity to go to the author. They may not be skillful enough as readers to penetrate to the

meaning. They may wish to see and hear the meaning expressed better than they themselves can express it. The reader is in a sense their representative, delegated to bring back to them the information, enlightenment, or delight to be found in the material. This is the responsibility he must assume.

Flexibility and variety

In conversation and in much public speaking, the speaker's movement, posture, gesture, and vocal inflections are characteristically his own. They should, of course, be varied to meet the requirements of different situations, but they are usually varied within the pattern of his own habitual manner of speaking. In reading aloud we are frequently called upon to express language prepared by one whose speech patterns are different from our own. We may wish to translate such language into our own personal patterns. Frequently we wish to suggest, or to give literally, bodily activity and vocal inflections and qualities which we ourselves would not use in our own original speech. In either case our reading will require flexibility and variety in the use of speech not required in most speaking situations. The student who wishes to develop his skill in reading aloud must see to it that he practices for bodily and vocal variety and flexibility. He should become conscious, first of all, of different postures, rhythms, qualities, pitch inflections, melodies, and tempos, as used by different persons. He should attempt to imitate them for practice. He should be aware of his own general speech patterns and should compare them with others that he observes. Knowing what others do and what he himself ordinarily does, he can then vary his techniques intelligently to meet the demands of the particular material.

Total bodily responsiveness

It is particularly important for the reader to have total bodily responsiveness. All good speech should be total; that is, the speaker should say what he has to say from the top

of his head to the bottom of his feet. Children usually do. Adults tend to become inhibited under the various social pressures to which they are subjected. Most of us get away from any broad bodily activity in our social relations. In getting away from this broad activity, we tend to lose totality and unity of bodily response. Our faces say one thing; our trunks say something else; and our legs and feet say something still different. The more intellectual we are, the more we are apt to rely on the use of small muscle groups. We are afraid of "letting ourselves go." It may help to remember that total bodily responsiveness does not necessarily mean broad action. The activity may be controlled to conform to the requirements of the most rigidly formal social situation. It needs to be present, however, if the speaking is to be vitally communicative. The reader should be able to respond with all his muscles to the ideas and emotions as they occur in the material. That is a basic requirement of effective oral reading. He then can coordinate and control the response to fit the needs of a particular situation. But until he can respond spontaneously and fully, he has nothing to control.

Pantomime

There is no better way of securing total bodily responsiveness than through the practice of pantomime. Pantomime is the physical basis of acting, and its practice necessitates the use of the large muscle groups which are so often slighted in the practice of other forms of speech. The prospective oral reader should spend considerable time in practicing the techniques of pantomime, even if his interest does not lie primarily on the side of impersonation or "performance." Imitate the actions of other people whom you know. It will direct your attention to the way individuals look and act in various situations. Depict actions requiring different stances and different rhythms. Use this practice to develop freedom in total bodily response. Characterize in the pantomime. It will help you get out of yourself. By getting out of one's

self one is able to get control of himself. This type of ability is useful in every kind of reading situation.

Vocabulary of tone qualities

Vocal quality, like muscular tonicity, reveals attitudes and emotions. It is the vocal element which gives color to expression. The reader should increase the flexibility of his technique by making sure he has an adequate vocabulary of tone qualities. Vocal quality is determined largely by general bodily tensions. The best way to be sure you have the suitable quality is to have the general bodily state which produces that quality. Quality and total bodily responsiveness go hand in hand. The reader should practice combining pantomime with voice of appropriate quality. Here again it is wise to observe the way people change quality under various conditions. Imitate the qualities you hear. Practice until you can run a scale of various qualities just as you can run a scale of various pitches. Control of quality is one of the chief means for securing artistic effectiveness in reading.

Variety of pitch

Pitch is the element of voice principally used in making logical distinctions clear. Effective reading demands particular skill in the use of the various pitch inflections. Also, one of the chief devices for brightening speech, making it unusually interesting to listen to, is the use of greater pitch range. The average speaker is apt to use too little inflection to make meaning really clear or his speech really interesting. The upward, downward, and circumflex slides, coupled with changes in quality, can make many an English sentence mean at least ten different things. Key words in phrases should be "pointed" by appropriate pitch variation. This device is one of great importance in giving phrases their proper emphasis and showing the relation of one phrase to another.

Increased pitch range is also a key technique in enlarging

speech to meet the demands of a larger room. A range appropriate to a small room may make speech quite flat, uninteresting, and meaningless in larger surroundings. The reader needs to be able to increase his inflectional range to meet the requirements of material and occasion. A good rule to follow is that no important word should be spoken without some sort of pitch variation, unless the special meaning attached to flat speech is desired. The inflection used must, of course, be determined by meaning. The reader should increase his sensitivity to pitch variations by listening carefully to speech in various situations—his own as well as that of others. He should practice inflectional technique until genuine skill in the use of pitch variation is attained.

Quantity

All the various elements of force and time are important in reading, as in other forms of speech. Words or phrases are emphasized by giving them greater volume or by setting them off by pauses. Changes in volume and rate indicate changes in moods and attitudes. The combination of force and time gives us tempo, rhythm, and meter, all extremely important factors in particular types of speaking. The reader needs to develop his skill in the use of these various elements. Quantity, the duration of the sound of syllables, is the most subtle of the various uses of time in speech. Skillful use of quantity is the final test of mastery of the handling of the time factor. Both ideational and emotional meanings are carried by changes in quantity. A syllable or word is made to stand out as logically important by lengthening it. Emotional states are indicated by lengthening vowel sounds or by shortening them. Unimportant words are given their proper subordinate position by actually giving their syllables less time. Keeping variety within a general rate is made possible largely by the use of varying quantities. There is no vocal skill which more clearly indicates the truly proficient speaker than effective use of quantity. The reader will do well to develop his ability to handle this speech

element effectively, for he will have many occasions on which to use his skill.

Questions and Exercises

1. Make as objective and accurate an analysis as possible of your present skill as a reader and as a speaker. Take time to think back over the process by which you arrived at your present state of development. What are your silent reading habits? Do you read slowly or rapidly? How much do you read? What type of material interests you most? Do you prefer to read aloud, speak, or act? Make a list of your chief strengths and chief weaknesses as a reader or speaker, so far as you now know them.

2. Select a half-dozen or so short excerpts from different types of material which a man or woman today might have occasion to read to an audience. Which type seems easiest for you to read to others? Can you tell why?

3. Bring to class a short selection of prose or poetry, the complete meaning of which you feel you have already mastered. Bring also a selection which presents particular difficulty for you. Read the two selections to the class. Discuss the meaning of the first and the difficulty you have encountered in the second. Get the group's reaction to your analysis and to the reading of the two selections.

4. Illustrate (*a*) practical, (*b*) theoretical, and (*c*) artistic purpose from current magazine material.

5. Prepare a short selection of prose or poetry, writing out the author's specific purpose in a fully declarative sentence. After you have read the selection, see how nearly the class members agree with you on the author's purpose.

6. Prepare a short selection of prose or poetry, the dominant unity of which can be expressed as a logical proposition. Does the class agree with your statement of the unity?

7. Find a selection from prose or poetry in which the dominant unity is clearly not an idea. Read the selection to the class, endeavoring to make the unity clear.

8. Take an excerpt from a poem, novel, essay, or play, which will lose value unless its relation to the whole is clearly understood. Make the underlying structure plain to the class in a short introduction before you begin to read. Be sure to make your

introduction appropriate in form and mood to the material to be read.

9. Test your knowledge of background material by making a list of the essays, lyrics, short stories, biographies, novels, ballads, monologues, plays, and so on, with which you are most familiar.

10. Try to state in a single sentence the chief characteristic of each of the various literary forms. Compare notes with other class members.

11. Divide several passages of prose or stanzas of poetry into word groups or phrases by drawing a vertical line between the groups or by writing a single group on a line. Underline the key word in each phrase. Note the relation of these word groups to the grammatical structure and the punctuation of the sentences. Read your selections aloud in such a way as to make the key word of each phrase clear, and its relation to the phrases preceding and following it easily apparent.

12. Read a selection of prose or poetry rich in imagery. List the different types of images you experience.

13. Make a list of the significant rhythms you have noticed in persons about you. See if you can express these rhythms in pantomime.

14. Secure an editorial presenting a point of view with which you are in full accord. Read the editorial until you are thoroughly familiar with it. Present it to the class, keeping as direct eye-to-eye contact as possible, and making your reading as nearly like your own conversation as possible.

15. Do the same with a selection from current magazine material.

16. Read such a poem as Browning's *Andrea del Sarto*, a profound and complicated piece of literature. List the facts and actions which are expressly stated. List the facts and actions which are implied. What philosophical comment does the poem make?

17. Try reading such poems as Shelley's *Ode to the West Wind*, de la Mare's *The Listeners*, or Sandburg's *Chicago*. Are your expressive powers adequate to meet the demands of the material reasonably well? If not, in what are they most lacking? Get a class reaction.

18. Listen carefully to the different speech melodies you hear

about you. Note a half-dozen or so distinctive inflectional patterns and qualities—racial, group, or individual. Practice these until you can give a fair imitation.

19. Walk before the class demonstrating (*a*) your own normal walk, (*b*) a stealthy walk, (*c*) a swagger, (*d*) a tired shuffle, (*e*) a mincing walk, (*f*) a confident, buoyant walk, and (*g*) a hop-skip-and-jump. These exercises may at first be done by groups of students. Do you find it easier or more difficult to control your body before the class than to control your voice? Is there agreement in the class?

20. Make up a series of pantomimes from incidents you have observed in real life. Present one before the class, giving your work as complete concentration and imaginative participation as possible.

21. Present some common sentence or phrase so as to mean at least a half-dozen different things. Does the class get your meaning at once from your inflection?

22. Present some prose or poetry to the class, paying particular attention to quantity.

CHAPTER 12

Interpretative Reading

All reading, as we have seen, is basically a process of translation of written or printed symbols into the visible and audible symbols of the speech code. The principles we have considered in Chapter 11 are applicable to any situation in which this process of translation is required. In reading, as in the other forms of speech, certain methods and approaches have been found by experience to be best suited for accomplishing certain types of purposes. Through this process of adaptation, three modes of reading have emerged: interpretative reading, impersonation, and acting. Each of these modes has accumulated a system of techniques, a set of conventions, and a tradition of its own, which, although there is no absolute agreement, are generally recognized as being most appropriate for the particular purposes involved. The three reading modes are distinguished from each other partly by convention, partly by the special techniques employed, and partly by the attitude of the reader toward his material and his audience.

The interpretative reader, like the speaker, retains his own identity. He appears and speaks, not as someone else, but as himself. He asks his audience to recreate imaginatively what he reads. He uses vocal and bodily technique just enough to aid this process by suggestion. His approach is thus predominantly mental and symbolic. The audience must itself interpret the words, tones, and movements which are put before it.

The actor, unlike the speaker, attempts to create the illusion of *being someone other than himself.* He assumes the literal outer aspects of a character. Traditionally, he utilizes the aid of make-up, costume, scenery, lighting, and all the

other devices of theatrical art. He usually works with other actors, under the conditions of dramatic performance in the theatre, on the motion-picture stage, or in the radio studio. Although he seeks to reveal the inner states, thoughts, motives, and emotions of the character, he does so by portraying literally the outer expression of those inner states. As the word *acting* itself implies, the actor's approach is, in a large part, through what he does. Even in radio acting, where the audience may not see the performance, the actor attempts to create the illusion by literal imitation of the character's voice. His approach, although necessarily technically different from what it would be in the theatre, is basically the same. He seeks to be someone other than himself.

Impersonation is really the actor's art modified and adapted to the conditions of the platform rather than the theatre. The impersonator is an actor, working alone, and usually without the aid of costume, make-up, scenery, or lighting. His approach, like the actor's, is through the literal expression of external physical attributes. He usually asks the audience to imagine the scene and other characters, but he gives a *representation* of the character he is impersonating. He speaks not as himself, but as the character, or characters, portrayed.

Impersonation and acting are modes of expression which, by their nature, are limited to the presentation of dramatic material, that is, material in which there are characters, or at least a character, dialogue, and action. Interpretative reading is adapted to a much wider range. As a matter of fact, the interpretative reader can present anything which he can read silently. This is not to say that any material will be appropriate to any occasion or for every audience. But there is no inherent limitation imposed by the method. Any technique, of course, needs to be used intelligently in relation to the material, the purpose, and the occasion.

The interpretative mode is the only one suited for the presentation of straightforward, practical material in a prac-

tical speech situation. It is also an effective technique for the presentation of literature in a situation where the reader's purpose is to meet artistic, rather than practical, standards. Let us now consider some of the principles involved when the reader attempts to present literature at a level of artistic effectiveness.

Ideal of the Interpretative Method

The ideal in interpretative reading is to have the audience respond so fully to the material that it becomes literally unaware of the techniques of voice and action employed by the reader. If the interpreter can arouse sufficiently strong imaginative responses in the audience to have the images and concepts of the material—the scene, characters, words, and actions depicted by the author—appear more real than the actual situation of which he and his listeners are a part, he will be raising the reading situation to a level of art. Complete success in creating this illusion is probably impossible for any reader, but it is the goal toward which effort should be directed.

The Interpretative Approach

The interpretative reader says, in effect, to his listeners, whether they are few or many, and whether they are gathered in an informal or a formal situation: "Here I am. I have some material that I think will be of interest and value to you. I have studied it until I think I know what the author is trying to do and appreciate the significance of what he has done. I have enjoyed this material myself. I want to pass on that enjoyment to you. Let me give you the author's words so that you can get his ideas, feelings, attitudes, mood, and something of the sound and rhythm of his style. If he introduces characters, I'll try to suggest to you what they look like, what they sound like, and what they do. I've attempted to recreate this material as fully as possible in my own imagination, and I'll attempt to present it vividly and interestingly enough so that you will be able

to recreate it imaginatively for yourselves. But I am not here as a performer. I'm not going to act out anything for you. You'll have to use your imaginations rather than your eyes to see what the author has in mind. I'm merely going to suggest to you what you might get from these pages if you were to read them for yourselves."

This approach gives the interpretative reader the complete flexibility of the speaker's technique. He adapts bodily activity and vocal projection to the needs of the material and the reading situation. He may employ broad gesture, considerable movement, active facial expression, changed voice, any technique which will effectively suggest the meaning he wishes to arouse. He may maintain direct eye-to-eye contact with his audience, or he may break contact to establish aesthetic distance. So long as he does not ask the audience to consider him literally as a person other than himself, no matter what technique he employs, he is reading interpretatively. His task is to make the values of the material intellectually and imaginatively apparent. To be in good taste, he must keep his expressive techniques harmoniously adjusted to the meaning he wishes to communicate and to the response of his audience, but he has available the entire range of the visible and audible speech codes. It is a mistake to suppose that the interpretative reader is any more limited in his mode of expression than is the speaker.

Interpretative Reading as an Art

Interpretative reading, like impersonation and acting, may be raised to the level of art. In fact, the student will derive the greatest benefit from the practice of this form of speech if he considers it as an art activity. The term *art* is a very inclusive one that has meant, and still means, a great many things to a great many people. Numerous definitions have been given. The one most significant to the interpreter is probably that which describes art as activity in which means and ends coalesce into a single unity. Interpretative reading

as an art is merely reading in which the techniques of speech used in stirring up the desired meaning in the listeners must become an integral part of that meaning. In other words, the techniques of speech must become artistic media instead of mere means of communication. You can ask someone to pass you the salt at luncheon, and it may make little difference whether your vocal quality is good, your inflections are varied, or your physical posture excellent. If you are sufficiently intelligible to stir up the idea that you need the salt, and if you haven't antagonized the hearer to such an extent that he refuses to cooperate, he will hand you what you asked for. Your speech has served a practical end. If, however, you wish to read a selection of literature artistically, you must be able to make the quality of your voice, the movements of your body, and your use of pitch and time, fit the ideas, emotions, images, and words of the material so completely that the meaning, or *content,* and the expression, or *form,* merge so appropriately into a single whole that the audience derives a sense of pleasure from the merging. That is artistic expression.

Between the extremes of possible artistry in interpretative reading lie all the gradations to be found between playing the piano for one's own pleasure and that of a few uncritical friends, and playing for the concert stage. The native endowment of the interpreter, his talent, the training and experience he has had, the audience and the occasion, all make a difference in just what artistic level can be reached. There are reading situations in which anybody with normal intelligence and some knowledge of elementary technique can give real pleasure merely by trying to appreciate the material through reading out loud. There are other situations where only a very exceptional person, with long years of careful technical preparation and a wide artistic and aesthetic background, could successfully meet the requirements of the occasion. The interpretative reader, like any other worker in the arts, progresses according to his talent and effort, from

the simple and relatively easy to the complex and relatively difficult. There is much of interest, pleasure, and benefit to be gained in any stage of the journey.

Some individuals feel that art is an unusual kind of experience, within the grasp of only the specially endowed few. Nothing could be farther from the truth. The artistic impulse is a universal one. Anyone who has ever wanted to do anything well for the fun of doing it well has been an artist. Even the most complex forms of fine art only idealize qualities found in common experience. The greatest novel or play is but an extension of the common impulse to tell a good story. The finest acting is but a refinement of the movements and sounds of our daily speech.

It is universally recognized that the question of form is important in all art. One of the satisfactions derived from artistic experience is the sense of ordered form which is created. Experience in general is so various, so ill-assorted, so fleeting, that we frequently find it unpleasantly confusing. We cannot see relationships. So many things happen so quickly that we have little time for contemplation, but, rather, only a sense of rapid progression of events. Art selects, arranges, gives proportion and emphasis, makes relationships clear, objectifies, and gives a fixed quality to experience. It gives events a beginning, a middle, and an end. It transforms mere experience into *an* experience.

The literary artist gives experience a form characteristic of the particular literary type with which he is working. By recording his subjective experience in words arranged in definite patterns, he objectifies it and makes it permanent. The interpretative reader must respond to this form and its meaning, and must translate it into appropriate patterns of sound and movement. In so doing, he creates a form which may also be artistically pleasing and meaningful, although, because of the nature of his art, it cannot ordinarily be permanent.

A great deal of speech, like other human activity in

general, is formless; or, perhaps better, is lacking in significant form. It lacks selectivity. We respond casually in speech to routine situations as we respond with other types of behavior. We say quite unimportant things just as we perform any quite unimportant act. At times we are unable to tell whether what we are saying is important or unimportant, because we are not aware of its relation to the general pattern of our lives. Many of the movements and gestures we use in speech are equally mixed and meaningless. One of the ways in which ordinary, everyday speech is transformed into artistic speech, is by giving it more consciously significant form—principally through more careful selection of language, movement, and gesture. The public speaker or the actor raises the level of his speech performance by doing less, as well as by doing more. In other words, he is careful to drop meaningless, random movement, and meaningless tones and inflections. As the situation becomes more and more removed from ordinary, commonplace speech situations, the necessity for this careful selection increases. The student who has had some experience with acting will recall that much acting technique consists in not doing things that are frequently done in "natural" speaking situations.

The interpreter's language is given artistic form by the author. The reader's task is to frame that language in appropriate patterns of sound and movement. As the reading situation reaches higher artistic levels, the question of the form of the expression becomes increasingly important. The student interpreting a poem informally in class may be little concerned with the principles of platform art. But the reader presenting an evening's program before a paying audience may be as much concerned with every position on the stage, every gesture, facial expression, and intonation, as is the skillful actor. Creation of artistic form in reading requires a body of knowledge and a group of skills separate from general speech background. The interpreter needs to be a skillful user of speech; he needs also to know the principles essential to his special art.

Detachment in Interpretative Reading

Artistic experience, in a sense, is never actual. The reason we can sit back comfortably in the theatre while an actor is pretending to stab a fellow actor is that we know it is all make-believe. Even when we are so thoroughly engrossed in the depicted action that we experience tremendous emotional response, it is different from what we would experience if the events were real and we were seeing them as part of our regular participation in life. We can, for instance, laugh heartily at characters and situations that we see in a play or read of in a story, whereas we would be extremely annoyed if we had to put up with them personally, or, even, if we knew that friends of ours were having to put up with them. Artistic form not only selects and arranges, but it also creates a sense of detachment, which is the very essence of art. This sense of detachment, or aesthetic distance as it is frequently called, differentiates artistic experience from other experience. It is the basis of the peculiar satisfaction and enjoyment we derive from the arts, and of the sense of refreshment and release which artistic pleasure brings.

In conversation, human beings meet usually in a direct, face-to-face, practical situation. Conversation is a means of assisting us to live together with reasonable comfort in such situations. In most public speaking, the speaker and the members of the audience are in the same kind of relationship to each other. They have met to exchange information, to consider ways of doing something, to find out what should be believed or done, or to discuss, or hear discussed, matters of practical concern to speaker and to listener. The speaker, under modern theory, does everything he can to keep as much as possible of the direct, person-to-person relation between the audience members and himself. He does not perform before them; he talks with them. He is careful, in other words, to keep the situation real and actual, and not to establish aesthetic distance.

The actor, on the other hand, under modern theory, is

careful to avoid as much as possible this very person-to-person relationship. He does not look at his audience directly. He does not speak to them. He speaks to the other actors, and the audience "overhears" him. He maintains the convention of the fourth wall. He goes about his business, apparently ignoring the existence of the audience. Proscenium arch and lighting effects help him to establish the impression of being in a situation removed from that in which the audience finds itself. He attempts to set up completely the separation of the fictitious situation created by the play and the actual situation of the physical theatre. Even in presentational acting, in which he speaks to his audience, he submerges his identity as a person and is a "character."

The interpretative reader, like the actor, is concerned with presenting literature in such a way as to create aesthetic detachment. Yet so far as physical environment and relation to the audience are concerned, he is usually in a position much closer to that of the speaker. His task is to cause the audience to forget him and the actual scene of which he is a part, and to respond imaginatively to the material, at the same time being careful not to intrude his own personality or the technique by which he seeks to accomplish his purpose. This is the exacting, but fascinating, problem of form in the interpretative method.

The Mechanics of Form

Placement

The eye is the chief expressive agent by which the relation of the reader to the audience is indicated. If he wishes to establish the impression that he is talking directly *with* his auditors, he seeks direct eye-to-eye contact. If he wishes to talk *for* the audience, he breaks contact. The device most frequently used is to keep the glance just slightly above the listeners' heads, without raising it enough to give the impression of looking upward or of looking at any actual objects in the room.

Scenes and characters can be "placed" for the audience by the way the reader directs his glance. They may be placed "on stage" or "off stage." To secure on-stage placement, the glance is directed to appropriate positions on the platform or stage where the characters or objects would be if the scene were an actual, rather than an imaginary, one. For off-stage placement, the reader directs his glance to appropriate positions in the imaginary scene he visualizes before him. Turns of the body help the eye in giving these stage directions to the imagination. A useful plan is to "set the scene" about two-thirds back in the room, making the necessary turns with this angle in mind. Care should be taken to preserve unity by making the performance consistent throughout. It is a common fault for readers to have characters leaping back and forth between the off-stage and on-stage positions. If the scene is set off stage, the characters should be kept there; if it is set on stage, characters should be kept in that realm and explanatory material should be made as unobtrusive as possible.

When characters talk to each other, direct eye contact with the audience is broken. The suggested character is made to speak in the direction of the character addressed. A suggested character may talk directly to the audience if the material makes this procedure appropriate. If the material is direct, objective discourse, eye contact with the audience is usually maintained. If, on the other hand, the material is subjective, material in which the speaker might be conceived of as thinking rather than talking aloud, eye contact is usually broken. The audience is thus given the impression that it is experiencing the subjective mental processes of the speaker. It is looking into him, rather than at him; it is overhearing him, rather than hearing him. These mechanical devices for aiding imaginative response are used differently by various well-known readers. Considerable flexibility in their use is possible without breaking artistic effectiveness.

Book, stand, or memory

Other questions involved in the mechanics of interpretative form are whether the reader should use a book or read from memory, and if a book is used, whether it should be held in the hand or placed upon a reading stand. These questions should be answered in terms of the reader's purpose and the nature of the situation. If the best effect is to be secured in impersonation, it is usually imperative that the reading be given from memory, but this is never necessary in interpretative reading. The interpretative reader may, however, wish to use memory for various reasons, unconnected with any aesthetic principles. Some audiences respond favorably to the sense of thorough preparation and control over material which a memorized presentation evokes, just as many persons feel that a musician is a more capable performer when he plays from memory. This is a naive attitude, but under some circumstances it may be important enough to force the interpreter to take it into consideration. Sometimes the mere physical environment is such that reading from the book or from the stand is inconvenient. Lighting may be so poor that the reader cannot see the page, or the arrangement of chairs makes the reading space too cramped to permit adequate space around a stand, or the reader may have been called upon so unexpectedly that he does not have material with him. A repertoire of memorized material may be a very definite social and professional asset to many interpreters.

The chief value of memorization in interpretative reading is, however, in the process of training. The student of interpretation should commit various types of material to memory for the opportunities of technical exercise thus provided. The thorough knowledge of material necessary before memorization is complete is helpful. Practice in presenting memorized material freshly, responding to the meaning alertly and spontaneously in spite of being familiar with it, is excellent training. But, artistically, memory is not neces-

sary in interpretative reading. In fact, memorization with most individuals actually hampers, rather than aids, artistic effectiveness. It is so easy to become merely mechanical, or to be tempted into undue performance activity, when the page is not present, that memorization offers distinct dangers to the inexperienced reader.

Whether to read from the book held in the hand or placed upon a stand is a problem of adaptation to the reading situation. If the audience is small and the occasion is informal —a situation, for instance, in which the reader might remain seated and yet be sufficiently impressive to be effective—the introduction of a reading stand would probably be obtrusive. On a more formal occasion, or in a larger room, unaided by a public address system, the reader needs to utilize the expressive power of more overt bodily activity. Here the stand is a distinct help. It not only frees the arms for gesture, but by its very presence it lends a certain dignity and significance to the physical environment in which the reader appears. It can be incorporated into the patterns of physical movement employed and may become a definite aid to suggestion. The student should practice reading informally with the book held in his hand, but he should also master the technique of using the stand as an aid to communication. There are many reading situations where the stand must be used if the interpreter is to be in command of the full possibilities of reading technique.

Physical activity

Physical activity in interpretative reading, as in public speaking, should be adapted to the requirements of purpose, material, audience, and occasion, all considered in terms of the personality of the reader. The principle that no technique should call attention to itself is very important here. In the past, many readers have tended to use too much physical activity. Influenced by a feeling that reading needed acting to make it effective, they have "put on a show" under conditions which necessarily made such activ-

ity a form of exhibition. As a result much public reading has been severely criticised by cultivated people. The student should bear constantly in mind that outer expression should be subordinate to inner activity and to the participative response of the audience.

It should also be remembered, however, that physical activity is an indispensable part of effective reading. Bearing, posture, movement, and gesture are as important in interpretative reading as they are in all speaking. Obviously some kinds of material require greater bodily activity than do others. One would expect a play or a story in which characters converse and act, to require greater physical activity than, say, some quiet essay or lyric in subjective mood. Adaptation to the audience may make a difference. Some individuals enjoy seeing considerable movement and gesture. Others are bothered by it. The occasion also will affect audience response. If the situation is such that restraint and dignity characterize customary modes of behavior, audience members are likely to resent any obvious breaking of the usual patterns. The ability to sense what degree of physical activity is most appropriate comes to the interpreter as his taste, experience, and knowledge of audience situations develop.

Physical Activity as Design

In addition to these matters of practical adaptation of physical activity as a speech tool, the truly skillful reader may raise the artistic level of his work by utilizing physical activity as a part of artistic design. The dancer or the actor uses his body in creating patterns of form and movement. Position on the stage, shift from one position to another, position of the limbs as a part of a total composition, change from composition to composition, all are carefully coordinated elements in the general design. The patterns in reading will necessarily be different. The amount of space is limited. The reader's action is more circumscribed, less an element in its own right. It is more suggestive than

literal, illustrating rather than presenting. This means that the reader may take a step where the actor would completely cross the stage; his arm starts to pick up an object, but does no more than start. The audience is left to complete the movement imaginatively. A slight change in posture suggests a whole series of movements. A hand gripping the reading stand may indicate the physical tenseness behind a blow. These elements, if carefully selected, may blend for the audience into a total visual pattern of mass, line, and movement which considerably heightens the aesthetic quality of the reading. All this may be done without obvious manipulation of posture, movement, and gesture. The more skillful the reader, the greater will be the impression of complete spontaneity and naturalness, but this impression will be an illusion. The reader is an artist, working in patterns of artistic design.

Tonal Pattern

The sounds of language are not only important elements in the meaning of words, but in many types of literature, poetry, and the drama, in particular, the total tonal pattern they produce is also definitely a part of the total artistic form. As in music, it has an aesthetic impact of its own. Just as appropriate patterns of meaningful spatial relationships enhance interpretative reading, so appropriate patterns of sound add to the artistic effectiveness which can be achieved. In the best reading, voice is used not only to carry the meaning of words and phrases with clarity and beauty, but also to combine with physical movement in order to reflect accurately the logical and emotional structure of the selection as a whole.

The techniques involved in the use of physical activity and voice as elements of design, as well as elements of speech, are not elementary ones. It requires considerable artistic maturity to employ them skillfully. It is quite possible that the student should not concern himself with them in

the early stages of his study. He should, however, recognize their existence and the possibilities they present. Employed by a reader with considerable mastery of technique, they give interpretative reading a subtle additional effectiveness and distinction.

Basic Qualities of the Interpreter

Good interpretation is an activity of the entire human personality. It is made possible only by a certain type of personality, developed through a continuing process of day-by-day experience of a certain kind. Part of that experience should include contact with audiences and with the particular types of behavior that occur when that social situation exists. In fact, the more audiences of various kinds an interpreter can face, the better he will be prepared to select the behavior most appropriate to any given one. Getting one's self before audiences is part of the process of interpretative development.

But it should also be remembered that a great deal of the experience which an individual must have behind him, if he is to interpret literature well, has nothing to do with the audience situation. Students frequently make the mistake of placing too much emphasis upon techniques directed primarily at the audience, thereby slighting those other techniques which are necessary before audience techniques have any excuse for existence. There is, of course, good reason for this overemphasis of the audience. Appearing before a group is an exciting and an exhilarating experience. The approbation of our fellow men is heady stuff, just as disapproval is a pretty bitter draught. We are rightly much concerned with securing the one and avoiding the other. The challenge to our powers which every audience makes, and the stakes for which we strive, easily seem more significant than they really are. Some individuals find that they have difficulty in forcing themselves to put in exacting effort in preparation unless they are sure they will have an

opportunity to get the reward of audience approval. Others are afraid to risk the ordeal of appearing in the audience situation. One attitude is about as harmful as the other to one's development as an interpreter.

It is safe to say that any student of interpretative reading should spend far more time cultivating his responsiveness to general experience as it occurs in literature or in everyday living than he need spend in cultivating the special forms of technique required to adjust adequately to audience situations. The personal qualities necessary for interpretation come largely as by-products from our general habits and our attitude toward experience, together with the values to be found in it or to be derived from it. Let us examine a few of the qualities particularly important to the interpreter.

Perhaps, first of all should come a zest for experience itself. The artist is interested in exploring the possibilities of life. He wishes to utilize his sensory apparatus, his intelligence, emotions, and imagination; and to experience living as richly and fully as possible so that he may understand and appreciate what life has to offer. One of the distinguishing characteristics of most artists is an unusual *vitality,* an *aliveness.*

This vitality may be a matter of sheer physical energy. It may be due more to an intense interest in persons and things. Whatever its cause, it is almost invariably present in those who create literature or in those who interpret such creation well. The student can profitably ask himself how vitally alive he is; how many facets of experience arouse his absorbed interest. The individual who finds either life or literature a dull affair will have little chance of making literature interesting to others when he attempts to interpret it.

Some persons are interested only in obvious surface facts or events. They are willing to take life at its outer value. They are almost sure to miss most of the fascinating activity that goes on behind the scene. The interpreter should develop an interest in causes and relations, if he does not al-

ready possess it. This is the drive that motivates the scientist. It is also the drive that motivates the good artist. It is the form of interest from which real understanding, enlightenment, and appreciation spring. Literature is one of the chief instruments man has developed to make underlying causes and relationships plain. Much of the fascination of good literature is derived from this quality. Looking beneath the surface of life is one of the best habits the prospective interpreter can develop.

There are men and women who are interested only in themselves or in those things which directly concern them. They have what we call the purely egocentric point of view. In infancy and in early childhood we are all egocentrics. As we develop mental and emotional maturity, we tend to become more objective, to acquire greater interest in the universal. "All literature," wrote Robert Louis Stevenson, "from Job and Omar Khayyam to Thomas Carlyle and Walt Whitman, is but an attempt to look upon the human state with such largeness of view as shall enable us to rise from the consideration of living to the definition of life."[1] As the interpreter's range of interests enlarge from the personal and particular to the objective and the universal, his stature as a person is increased.

An author's philosophy of life is almost sure to be one of the most significant aspects of his work, because consciously or unconsciously it will affect everything he says and the way he says it. This fact is also true of the interpretative artist. After one has mastered technique, probably the most important single thing about him will be his set of values, as evidenced by the philosophy he follows. His knowledge and skill determine what he *can* do at any time; the values he lives by determine what he *will* do. The student should be aware of the very direct and practical importance of the philosophy he is developing. This is no matter of abstract theory; in interpretation, as in every other activity, it will determine the ultimate quality of his work.

[1] *Aes Triplex.*

All of us are, of course, limited by circumstance in the amount and kind of direct experience we can obtain. Were we dependent upon the external physical world alone for experience, our lives might well seem circumscribed indeed. Fortunately, we are not so dependent. We may participate in life vicariously, drawing upon past experience, that of others as well as our own, for our raw materials, and then molding them anew into countless patterns, and, using these patterns in turn as raw material for still other patterns, make our secondary, internal world, far more stimulating than we may find the actual world around us. We call this process imagination. We use it in day dreaming, in artistic creation, and in reading, which is a form of creative activity. The author provides the stimulus. Our responses, both intellectual and emotional, do not differ greatly from those we use in responding to our actual environment. The interpreter should read widely, not only for the technical practice it affords, but also as a means of broadening his experience. Much of the experience we can obtain through careful reading is as vital and significant as any we could get directly. A real interest in books is a requirement for anyone who wishes to develop his interpretative powers to their full possibilities. An appreciation of literature, like an appreciation of life, is necessary for the best interpretation of any single selection. The more experience we can bring to focus at any single instant, the more we can illumine the event of that instant.

Vivid, intelligent responsiveness to everyday experience, of which reading itself is a part; a willingness, even an eagerness, to seek new experience, direct and vicarious; the habit of looking for hidden relationships and of weighing values; these are some of the more general factors which the interpretative reader should not overlook. They will determine his abilities just as surely as any practice on special technique. Development of sure skill as an interpreter is fundamentally a matter of steady, everyday, personal growth. In the words of Professor Gertrude E. Johnson, "Expressio-

has to do with the very essence of the individual, and is, at first and always, a growth, not an acquisition." [2]

Making the Most of Experience

Another quality important to the interpreter is the ability to make the most of whatever experience is available. Experience for each of us consists not so much of the facts of our external environment as of our reactions to those facts. When we say that something has happened to us, we really mean that something has caused us to respond in a certain way. It is the extent and quality of the response that determines the significance of the experience so far as we are personally concerned. Some individuals require tremendous stimulation from outside before much happens within them. Others are sensitive to degrees of stimulation that the first type misses entirely. Such persons perceive significance in apparently insignificant details. They find new and interesting patterns emerging from seemingly commonplace relations. They have an inner resourcefulness which relieves ordinary, routine experience from monotony and makes the daily round of work or study take on a touch of high adventure. It is almost needless to point out, that, other things being equal, such individuals have much greater chance of being good interpreters than those who are lacking in awareness, sensitivity, and creative resourcefulness. Human life, even in its most routine and simple aspects, is rich with universal implication. A distinguishing characteristic of the artist is the ability to perceive those implications. The attitudes we have been discussing will assist an individual to respond more fully to all his available experience. As his ability to respond increases, his possibilities as an interpretative reader will also increase. There is no surer way of promoting personal growth than utilizing to the fullest extent all that we are and all that is around us.

[2] Johnson, Gertrude E., *Modern Literature for Oral Interpretation,* rev. ed., p. 18. New York: D. Appleton-Century Co., Inc., 1930.

Material for Interpretative Reading

As we have seen, any material may be read aloud interpretatively, subject only to common sense and good taste in adaptation to purpose, reader, audience, and occasion. Various types and forms of literature present special technical problems, and each offers its own special opportunities and values to the interpreter and his audience.

The first point to take into consideration in choosing material is whether the reading is being done primarily for the sake of the reader or for the sake of the audience. In most classroom situations, reading should be done chiefly for the personal and technical development of the reader. Here much of the reading should be considered frankly as laboratory activity, with the more formal aspects of the reader-audience situation for the most part greatly minimized. Complete and spontaneous response on the part of the reader to the material should be the chief aim. A wide variety of material should be studied. The natural aptitudes of each reader should be noted, special weaknesses discovered, and corrective suggestions given. Audience and reader should unite as coworkers in the interesting process of discovering the possibilities inherent in each type of material and its presentation. Readers should seek to gain abandon in surrendering themselves to the postures, movements, language, associations, and images suggested by the material. The niceties of form should be considered only after rich, sincere, and spontaneous response has been obtained.

There are many informal gatherings outside the classroom where reading can be considered as something of a laboratory experiment in human reaction. A group of friends may get together with the avowed purpose of exploring the possibilities of different types of material. Such reading, done largely in the spirit of the informal discussion group, with different members taking turns in reading, offers one of the finest methods of training, as well as affording

opportunity for much enjoyment. The whole range of expository and imaginative literature is available.

The interpretative reader should not lose sight of the fact that human beings enjoy increase of intellectual understanding as well as emotional and imaginative stimulation There is plenty of expository material—selections from history, philosophy, even from science—which may offer genuine pleasure to many audiences. It is by no means necessary to limit interpretative reading to the highly emotional or to the strikingly dramatic.

Of course, where a more formal audience situation exists, conditions may be different. Most audiences do not enjoy being part of an experimental process in exploring literature. They are afraid of being bored. This is one of the dangers imposed by the audience, and for that reason, there is a temptation for the reader to think constantly in terms of effects. The reader too frequently turns to material merely because he can already do it well, or to selections that contain elements which make them "sure fire." Much of the stereotyped, sentimental, overemotional material still too frequently found in public reading is chosen because readers are thinking only in terms of easy audience reaction.

Both for reader and for audience, the best material is that which is within the range of present experience, but which presents ideas and emotions sufficiently complex to make the individual extend himself a little beyond his ordinary, commonplace reactions. For all of us there is much material which intellectually, emotionally, and imaginatively requires only routine response. We turn to it for information, amusement, or easy stimulation. It serves a perfectly useful purpose, but it does not force us to be at our best. There is other material which, at first, we cannot completely understand or fully assimilate emotionally and imaginatively. In it we are a bit out of our depth. But by extending ourselves a little we can successfully meet the demands the writer is making on us. Such material not only increases our powers, but also gives us pleasure through a sense of

satisfaction, fulfillment, and growth. Material which is initially better than the reader, but which he can master through study and practice, is the kind most conducive to his development. It is also the kind most likely to give the audience real satisfaction.

The average student will probably find it easier at first to read straightforward prose than poetry or dramatic dialogue. Prose is closer to the pattern of our everyday speaking, thinking, and feeling. It is the normal form of expression for most of us—the form in which we feel most completely at home. Much prose material, speeches, essays, excerpts from articles, and the like, may be read directly to the audience, quite as though the reader himself had written the words and was now appearing as a speaker to deliver them. Under these conditions, as we have seen, direct eye-to-eye contact is maintained as much as possible.

Poetry introduces the special problems of heightened emotional and imaginative content, definite metrical patterns, and increased importance of sound as such. Greater personal sensitivity and more technical proficiency are required to read poetry well than are required for much prose. Yet poetry is a perfectly natural mode of expression. As a matter of fact, because it is predominantly emotional and rhythmical, it is a literary form most closely connected with the natural expressive activity of primitive man and of children. Prose develops as intellectual behavior becomes predominant. As youngsters we all responded more readily to the rhythm and rhyme of verse than many of us do now. Our habits of thought and expression get conditioned into more prosaic patterns in later years.

There are two main faults to be avoided in reading poetry. The first is the fault of attempting to read it as though it were prose. Remember that the poetic form is definitely a part of the meaning which the author intended. It must be given its full value if the author is to receive fair treatment at our hands. Readers who seek to avoid the difficulties of the poetic form by reducing it to prose are apt to break

the lines up into the phrases of ordinary conversation, fail to give the metrics and rhyme scheme sufficient stress, lack sustention and music in their tones, and reveal no trace of that "emotion with wings" which is the essence of the poetical.

The second fault lies at the opposite extreme. The reader becomes so excessively lyrical that all resemblance to ordinary speech is lost. He chants or sings his words, or breaks grouping necessary for meaning in order to emphasize the meter and the rhyme. He may make the mechanics of the verse form stand out so clearly that one gets little of anything but singsong. Some readers who have better mastery of the mechanics still get so carried away by the idea of the exhalted nature of poetry that they produce something which is neither speech nor music, and certainly is not good reading.

Poetry needs to be read so that it has intelligible meaning; intense, but controlled feeling; beauty of tonal pattern; rhythmic flow; and a sustained sense of metric form. The patterns of normal speech, although somewhat modified at times, must not be lost. Poetry well read is really speech at its best. Its study will repay the interpreter well in increased abilities of impression and of expression.

The greater part of lyrical and narrative poetry can be given directly to the audience. Some lyrics in highly subjective mood may be made more effective by breaking eye-to-eye contact.

Narrative material, both in poetry and in prose, affords the interpretative reader some of his best opportunities. It is the rare individual who does not respond favorably to a well-told story, and the interpretative method gives the reader an opportunity to tell a story well.

In the presentation of narrative material, the reader frequently has occasion to introduce characters. These, as we have seen, may be suggested quite fully by vocal and bodily changes, but the characterization should always be kept subordinate to the narrative development. The scene is placed "off stage." Eye contact with the audience is broken when

characters talk to each other, but the descriptive and narrative portions are spoken directly to the audience.

Sketches and plays offer a rich field for the interpretative reader. In this type of material, the scene is also set off stage. Stage directions are given as description or narration, directly to the audience. It is better to consider even the play chiefly as a narrative. Keep the story moving. Do not let the temptation to "play" certain characters too completely get you off the main narrative track. Establish the character by suggestion in voice and body; place the character definitely in the imaginary scene; then let the audience create the details for itself. Describe action that is too complicated for easy suggestion, keeping the account in harmony with the mood of the scene. Work constantly for a total unity of impression. Remember that the interpretative reader is not an actor. He is telling a whole story vividly.

Practice in Reading

Skill in interpretative reading, like skill in any other art, can be developed fully only through doing. No amount of theory can do more than tell the student what should or should not be done. He must develop his powers of executing that theory through his own efforts and largely under his own initiative.

The development of skill as an interpretative reader is comparable to developing skill as a singer or as an instrumental performer. It is just about as difficult to learn to read well from the page as it is to learn to play the violin. Because we all read a good deal and because we all speak, it is easy to forget that we need to set aside special time for practice. This is one reason why there is so little really good reading to be found today. Our general habits are deceiving. They frequently are no more serviceable for first-rate reading than are the general habits of hands and arms for first-class violin playing.

The student who wants to develop himself as an interpre-

tative reader should set aside a definite practice period daily. Here he should experiment with himself, working with various types of material and with the various vocal and bodily techniques for expressing them. A half-hour daily, six days a week, for two years will work wonders with the average individual. Less effort for a shorter period can, of course, be expected to bring some change. We should remember that it is intelligent practice distributed over a sufficient length of time that produces results. One cannot expect to acquire overnight the nicely coordinated habits necessary for good interpretation.

In addition to the regular practice periods, the student should take advantage of every opportunity for actual reading to audiences. One of the great advantages of the interpretative method is that it offers a wide possibility for use. No expensive equipment is required. No highly formal occasion is needed. Material of a wide variety of appeal is readily available. The interpreter should seek out every opportunity for putting his theory and practice into actual use. It is only through a wide variety of experience that development can be fully achieved.

Impersonation

Several types of literature, such as the dramatic monologue, sketch, play, and the like, are written in terms of dialogue and action, with actual performance before an audience in mind. The author does not tell what happens or what his characters think, feel, or do. He presents the characters themselves, permitting the audience to hear what they say and see what they do. From what is seen and heard, the audience must understand what the characters think and feel. The author makes no direct comments of his own. What he thinks or feels must be inferred from the action and dialogue. The dramatic form presents opportunity for impersonative presentation.

We have already noted the main distinctions between im-

personative and interpretative reading (see pp. 288-290). As we have said, impersonation is really the actor's art modified and adapted to the conventions of the speaking platform. Some recent writers, in fact, prefer to call impersonation "mono-acting," and to refer to the various arts of the solo entertainer as forms of "mono-theatre." [3]

Impersonative form

There are two general styles of impersonative presentation. In the first, the impersonator sets his scene and places his characters "on stage," establishing complete aesthetic distance between himself and the audience. This method is a modification of the representational acting common in our present-day realistic theatre.

In the second style, the impersonator creates a character who talks directly to the audience. This is a modification of the older presentational acting. It is a form frequently used in the presentation of humorous or eccentric figures who harangue the audience for comedy effect. It is also a useful form of story telling. The narrator is a fully impersonated character who tells the story to the audience as the "hearer."

In the literature on impersonation, the term "hearer" or "listener" is used with a special technical sense to refer to the character to whom the speech is addressed. The term "speaker" is also used specially to refer to the character doing the talking. Some material is very explicit in describing exactly the "speaker" and the "listener," together with the situation under which the conversation takes place. Other material leaves these details more to be inferred from what is said and what transpires. If the speaker and hearer are definitely described, and objective business is made a part of the dialogue, the scene is best placed on stage. If the hearer is more generalized, or if the action is not directly alluded to in the dialogue, the audience may be

[3] Crocker, Charlotte; Fields, Victor A.; and Broomall, Will, *Taking the Stage*, pp. 112-115. New York: Pitman Publishing Corporation, 1939.

considered to be the hearer. The form of material should govern the choice of these possible methods.

Under either style of presentation, the impersonator can utilize much more of the available platform space than he can in interpretative reading. The impersonative method, in fact, implies considerable freedom of movement. In order to facilitate this freedom, material should be committed to memory. Walking through realistic action with a book held in one hand, or giving literal characterization and then returning to the reading stand to find out what to do next, are practices which necessarily break illusion badly. They are no more appropriate in impersonation than they would be in acting.

The amount of literal business employed varies widely with different impersonators, but ordinarily impersonation, though more realistic than interpretative reading, is less literal than actual acting. The impersonator usually asks the audience to imagine the scene in which the action takes place, the movements of the characters which are not being impersonated, and the costumes which would ordinarily be worn. Even when properties and costumes are used, they are usually suggestive rather than exact. A chair or two may indicate the furniture of a room; a shawl thrown over ordinary dress or a coat collar turned up may suggest setting and costume. Business is also highly selected and scaled down from what it would be in actual theatrical production. A single individual, no matter how skillful, cannot be three or four individuals at the same time. The impersonator, like the interpretative reader, must rely greatly on the imaginative cooperation of his audience. He appeals to the physical eyes of the spectators far more than does the interpreter, but he must select what he does in such a way that it will suggest a great deal more than is actually seen.

As an aid to creating this illusion, the impersonator should avoid the use of literal objects which are obviously different from the objects they are supposed to suggest. It is much better to play to completely imaginary objects in a com-

pletely imaginary scene than to ask the audience to transform some well-known piece of furniture into something which it very clearly is not. Inexperienced impersonators seem to feel an urge to have the support of tangible properties and settings. A student kneels to a chair as though it were Juliet's tomb. A lectern is leaned against as though it were a wall. Such use of the literal is sure to make the audience aware that what is going on is a mere performance. The impersonator should be careful not to ask more in the way of imagination than it is humanly possible to give. The greatest danger of the impersonative method is that the performer cannot create illusion under the conditions that prevail as he works. If he fails, all his efforts will seem artificial, and not a little absurd. The principle that no technique should call attention to itself is important here.

To meet the demands of impersonation as a serious art form probably requires more inherent aptitude and a more highly specialized skill than do either interpretative reading or acting. The impersonator must have a coordinated control of his whole body and a sense of mimicry and characterization which the interpretative reader need not possess so fully. The actor, to be sure, needs this same ability, but he is usually required to play but a single character in a performance. His task is made somewhat easier because he is not required to create all his effects singlehanded. The mere variety afforded by other members of the cast is of itself an aid to each performer. The enlargement which comes from the group activity and the full-scale theatrical background lessens the creative burden imposed on the individual. The impersonator is in the same relation to the actor that the solo musician is to the members of an orchestra or chorus, except that he must also create his supporting performers in the imagination of the audience.

Extrinsic difficulties in impersonation

For a clear understanding of the problems he may have to face as an impersonator, the student should also recog-

nize the importance of certain audience attitudes which he is likely to encounter. There are many individuals who, if not actually hostile to the impersonative approach, are at least inclined to view it with suspicion. Some look askance at any attempt to present the dramatic at all realistically with a cast of one, on the grounds that no matter how skillful the single performer may be, he alone simply cannot take the place of a full cast and supporting theatrical art. Such persons will accept the conventions of interpretative reading more readily because they are closer to those of the speaking situation. They feel that the impersonator puts himself in the position of a singer without accompaniment, or a musician attempting singlehandedly to be a whole orchestra.

Impersonation also has become associated in the minds of many with the artificialities and excesses of an older elocution, or the absurdities of some school reading and declamation contests. The fact that so many dramatic readers and impersonators have lost perspective on what can and what cannot be artistically effective before intelligent people has brought the whole impersonative method under question. Some feel that impersonation necessarily means embarrassing or silly histrionics, the tearing of passions to tatters, grimacing and bodily contortions in the name of humor, general insincerity, extravagant emotional display, or unrestrained exhibition.

Still others are inclined to see impersonation only as a sort of vaudeville stunt or burlesque. They will accept it as such, but they shy away from any attempt to raise it to the level of serious dramatic performance.

Finally, there are undiscriminating individuals who demand of the impersonator the very things that have brought impersonation into disrepute. These are the simple souls who are willing to accept rant and bombast as drama, bathos as pathos, sentimentality as sentiment, vulgarity as humor, and mere physical activity as impersonative skill. In spite of the campaign for better standards in all forms of public reading, there are still enough of these individuals to put

temptation in the way of the impersonator who has an eye for easily won, uncritical audience approval, or for personal exhibition.

Value of impersonation

These extrinsic difficulties make it necessary for the impersonator to be very sure of his technical competence, sound judgment, and good taste if he is to be successful artistically in public recital. But as we have already seen in connection with interpretative reading, public appearance is but one of many aspects in the development of our powers. Practice of the impersonative method is of value to many students who have no desire to become professional impersonators, or, so far as that goes, have no desire even to appear in public.

The use of the whole body as a completely coordinated, completely responsive, expressive mechanism, is general training of the highest order. The physical, mental, and emotional release which complete characterization engenders is valuable to anyone. The freedom from inhibition which successful impersonation demands, and the training in realistic expression which it affords, will strengthen all our speech abilities. A reader or a speaker should be able to do with his body and his voice anything that he may want to. There is no better training than impersonation to give him complete flexibility. He may, for one reason or another, not care to use full impersonative technique, but the ability to use it will give him additional power in whatever mode of expression he deems advisable. The working out of dramatic material for impersonative treatment forces analysis of dramatic values and is excellent stimulation to dramatic imagination. The impersonator becomes director, actor, stage designer, all in one. Also, it is only through working with the various forms of expression that the student can be brought to realize fully the possibilities and limitations of each, and his own special aptitudes and weaknesses. Such recognition is the surest guarantee of good taste and sound

judgment in the choice of material and method for a given situation.

Finally, in spite of what we have said concerning the difficulties of the impersonative method, it should be recognized that for specially qualified individuals it still offers an excellent medium for a satisfactory and highly pleasing form of public art. The popularity enjoyed by such impersonators as Cornelia Otis Skinner and Ruth Draper among cultivated and critical people shows that real ability will find an appreciative audience. The process of discovering ability and developing it when found is one that is worth the attention of every student.

Questions and Exercises

1. Study the speech of a character in a play. Under what conditions might this speech be read to a group for a practical purpose? When might it be read interpretatively, but with an artistic purpose? What would be the conditions under which it would be impersonated? How would techniques differ in interpretation, impersonation, and acting? Make the distinction to the class, illustrating your remarks with the material you have studied.

2. Distinguish between practical and artistic purposes, illustrating from material you know.

3. Practice for flexibility in your interpretative technique by talking *about* a selection and reading from the selection, making the transitions from speaking to reading as smooth and easy as possible.

4. Read a short monologue or soliloquy twice to the class, first placing the character on stage; then off stage. Be careful to keep each performance consistent throughout. Which seemed most effective? Get class reaction.

5. Commit a selection completely to memory. When you have it letter perfect, read it to the class from the page, making your every response as fresh as the first time you saw the material. Now read from memory, attempting to get the full significance of each phrase just as though you were reading it for the first time. Can you respond spontaneously to the material, or do you fall

back on habits of expression you have developed during the process of memorization? Get a check from the class.

6. Prepare a short program of mixed material in which you speak to the audience, read from a book held in your hand, and then use a reading stand.

7. As a technical exercise, read a selection as you would to a small informal audience, a small group on a formal occasion, a large informal gathering, and a large formal group. Be sure to make vocal and physical activity appropriate to each other.

8. What character in the fiction you know had the greatest zestful aliveness? Describe the character as completely as you can. How would his or her zest for experience reveal itself objectively? Can you imitate the posture, movement, and gesture you imagine this character to have had?

9. Who is the most interestingly vital person you know in real life? Give as exact and literal an imitation of this person as you can. Now see whether you can universalize the most outstanding characteristics, that is, suggest the quality without giving a literal imitation.

10. Purely for your own information, write down as accurate a statement as you can of your dominant philosophy? Would you feel free to disclose this philosophy to others? If not, why not?

11. Present to the class an excerpt from some material which forced you to make new mental or emotional adjustments.

12. Present some material which you like particularly because of its easy, familiar appeal.

13. Prepare a cutting of an essay or article best suited for direct presentation.

14. Prepare a short program of light verse.

15. Read a selection of poetry in which sound itself is definitely a part of the meaning.

16. Read an old ballad to the class. Ask the group to join in on the refrain.

17. Read a modern ballad.

18. Prepare a ten-minute cutting from a short story, novel, or play. Practice for interpretative presentation.

19. Prepare for yourself an hour's practice routine which puts you through a wide range of vocal and physical activity.

20. Be on the lookout for material. Keep a notebook in which you collect material of various kinds.

21. Prepare a short representational impersonation.

22. Prepare a short presentational impersonation.

23. Take several significant dramatic monologues, such as those of Browning, and make a careful analysis of the "speaker" and "hearer."

24. Prepare an impersonative pantomime in which you imitate some well-known public personality.

25. Prepare a fifteen-minute interpretative presentation of a scene from some novel or play.

CHAPTER 13

Public Discussion

We have defined discussion as the cooperative deliberation of problems by persons thinking and conversing together in face-to-face or co-acting groups. In Chapter 10 we considered discussion and conversation in face-to-face groups. Here we shall be concerned with public discussion in co-acting groups. As we have said, the co-acting situation is one in which a well-defined audience is responding to some central source of stimulation—in this case a discussion given for their benefit. While the normal situation for discussion is the relatively informal, face-to-face group, various methods have been devised which make it possible to conduct discussion in large groups of the co-acting type. It should be emphasized that much of what was said in Chapter 10 about the nature and purpose of discussion, and the methods of preparation, participation, and leadership apply with equal force to the techniques which we are describing here. Discussion under any circumstances has certain essential characteristics: It is reflective, critical deliberation or inquiry, and it is a cooperative undertaking, entered into for the purpose of reaching a better understanding on problems. The purpose of this chapter, then, is to develop methods which will enable large groups to discuss problems in this manner.

Panel Discussion

Panel discussion may be defined as group discussion carried on through conversation among four to eight persons in the hearing of an audience and for the benefit of this audience. The essential feature of the panel is the fact that it employs conversational discussion. The members of the panel speak to each other, not to the audience. The audi-

ence is given an opportunity to listen to this panel conversation and ordinarily is given an opportunity to participate in a forum on the subject after a fairly definite pattern of ideas has been developed by the panel.

Methods

The members of the panel should consist of well-informed, quick-witted individuals who are able to express themselves easily and fluently. It is of first importance that they have a good background on the subject which they are discussing. Unless the problem is in their field of specialization where they are exceedingly well informed by virtue of long study and continuous contact with it, it is important that direct preparation be made. Here, as in group discussion, the discussion outline may be of service as an instrument for guiding preparation.

While we urge careful individual preparation, considerable experience with panel discussion has demonstrated that it is almost invariably a mistake for the group to rehearse the discussion before it is presented to the audience. What happens is usually this: An alive, stimulating, spontaneous discussion takes place at the rehearsal, and the discussion presented to the audience is then served up with little interest and enthusiasm. The chief value in panel discussion lies in the way in which it admits an audience to the active thinking expressed in the spontaneous talking of a group of people. To the degree that this supposedly active thinking is stereotyped and channeled by rehearsals, this value disappears. For people who are not acquainted with the panel method, it may be wise to have a meeting with the leader in which their responsibilities are outlined and some idea of the scope of the discussion is decided upon. There should be no attempt at this time, however, actually to discuss the subject.

In conducting the discussion, the panel should be seated in front of the audience, preferably on a raised platform, and arranged in a semicircle facing the audience. If possible, it

is well to seat the members of the panel at a table. The leader of the discussion should be placed in the middle of the semicircle and the more articulate members of the panel at the two ends. By this simple expedient, it is possible to place next to the leader those people who are least likely to respond readily, thus making it easier for them to be brought into the discussion than it would be if they were in the end positions. Practice and experiment have proved that not fewer than four nor more than eight people make the best number for such discussion. The group becomes unwieldy if too many are included, and it is likely to lack variety and breadth of viewpoint if too few are included.

Panel discussion is usually opened by a short statement from the leader, who also acts as chairman of the meeting. In this statement he announces the problem for discussion, introduces the members of the panel, and explains briefly what the procedure for the meeting will be. If the audience is going to be permitted to participate in a forum following the discussion, the leader should be certain to announce this in his preliminary remarks. He may close this opening statement by directing a question or two to the panel which will serve to open the discussion and to effect an easy transition from his statement to the discussion proper.

In general, the logical pattern of the discussion should be the same as that explained for group discussion in Chapter 10. That is to say, the problem should be defined and analyzed, solutions suggested and compared, and some attempt made to work out the practical implications of the solution which seems to be favored by the group. The leader's responsibilities are essentially the same as those in group discussion, except that he must see to it that the discussion moves along in terms of the time limits available to the group. It is usually fatal for a panel to dally too long on any one matter. Their main function in each phase of the discussion is to bring out the more important issues and briefly to discuss their implications for the problem. While the conversation should be among the members of the panel and the

contributions should be directed to the panel, the audience must not be neglected. Speaking must be such that the audience can hear it easily, and the tempo of the discussion must be such that the attention and interest of the audience is sustained.

Needless to say, perhaps, the attitude of the participants should be that of thoughtful, friendly, spirited inquiry into a significant public question. The leader's role in many respects is analogous to that of host to the group.

Values and limitations

Panel discussion provides the closest approximation to intimate group discussion that can be given to a large audience. It enables the audience to participate subvocally, as it were, in the active thinking process of the panel group. This is its chief value.

The method lends itself best to the discussion of problems which are already fairly familiar to the audience. Where they already understand the general problem area and have many of the facts in their possession, it is possible for the panel to deal very largely in a discussion of interpretations and values. Where the problem is new to the audience, or is technical in any of its aspects, and where very few of the working facts are available, the panel is not likely to provide the most useful approach. Another fact conditioning the usefulness of the panel is the size of the room and the size of the audience. If the conditions are such that the members of the panel must raise their voices to any considerable extent above the normal conversational level, the situation is likely to appear artificial and stilted. After all, people do not usually conduct friendly conversation where they have to shout at the top of their voices. Loud speaker equipment with a microphone on the panel table may obviate this difficulty in part, but normally the physical setting and atmosphere of the occasion should be such that the normal conversational manner of speaking will carry to the audience without difficulty.

A third, and perhaps the chief, limit of the panel method lies in the panel members themselves. Almost anyone can profit as an individual by participation in discussion, but there is some question about the advisability of asking the audience to suffer through this process unless the individual has something to contribute to them. In other words, panel chairmen should be very careful to select people who are capable of meeting the responsibility to the audience which a public discussion imposes upon them. In this same connection, we have discovered to our dismay that many competent people do not take panel assignments very seriously. People who will prepare most carefully for a public address will often do nothing to equip themselves to make a contribution in panel discussion. The result is precisely what might be expected—a desultory, uninformed conversation. It is probably fair to say that the failure rate is higher in the panel method than in any other type of public discussion. Panel discussion can be very good and it can be very bad. All of this means, of course, that persons responsible for discussion programs must use the method with considerable discretion, and with a clear understanding of what it can do and what it cannot do.

The Dialogue

The dialogue consists of a discussion between two persons, conducted in the hearing of an audience, in which one of the participants serves as a questioner and the other appears in the role of the respondent. This method, like the panel, is usually followed by a period of forum discussion in which the audience participates.

Methods

We shall deal first with some suggestions for the questioner. The questioner is usually in charge of the meeting and makes any preliminary statement which needs to be made. In this capacity his duties are much the same as the leader of the panel which we have just described. As a

questioner, his principal function is to represent the audience in putting queries to his associate in the discussion—queries which will bring out the information that the audience wishes to hear. If we may assume that the respondent is a man whose background on the problem is such that his reactions to it are significant (and we must make this assumption if there is any point at all to holding a dialogue); then the questioner's dual responsibility is that of providing an opportunity for this man to say what he has to say and securing for the audience the discussion which they most wish to hear. Unless some other plan readily suggests itself by the nature of the occasion, the steps in reflective thinking, previously outlined as the logical pattern of discussion, may be used to determine the questions. That is to say, if the respondent is going to be given an opportunity to develop the subject systematically, he should be asked questions which enable him to define the problem, analyze the problem, and explain his views on possible solutions to the problem. The questioner may prepare some of his questions in advance, but these most certainly should be adapted to the situation as the dialogue develops. An alert questioner will find the cues for further questions in the answers of the respondent and in the apparent reaction of the audience to these answers. Stimulating and profitable lines of development, which are impossible to foresee in advance, may emerge as the dialogue progresses.

The questioner may, at times, interpolate comments of his own if he feels that he has something to contribute on the subject. The general question and answer framework of the dialogue can, and should, be applied loosely and flexibly. Especially is this true in a situation where the questioner is something of an authority on the subject in his own right. On the other hand, it surely is a violation of good taste on the part of the questioner to do too much of the talking himself. If there is any reason for holding the dialogue in the first place, then we must assume that the audience is primarily interested in hearing what the respondent has to say.

The man answering the questions should interpret them freely and liberally. In other words, he should take the questions as an opportunity to develop the aspects of the problem which he thinks will contribute to an understanding of the problem. Short, enigmatic replies are seldom helpful. Some respondents seem to take the attitude: "Get something out of me if you can." The result is a rather painful process very much like pumping a reluctant witness in a lawsuit. At the other extreme, one is likely to encounter the discursive, expansive individual who takes every question as a cue to launch off into an impromptu oration. In replying to questions, it is possible to bring in the views of others, to contrast those with one's own views, and to indicate that there are several ways of looking at the matter under consideration. This we would not judge to be discursiveness in any objectionable sense; certainly the speaker should try to open up the question, raise the issues, and discuss different attitudes which may be taken toward these issues.

As we have said, the question and answer approach in the dialogue need not be inflexibly applied. If the questioner sees fit to offer his own ideas on the subject being developed, certainly the respondent has the right to raise some questions of his own and to engage his colleague in a give and take discussion. It is easy to see, of course, that if such a free discussion develops, the dialogue becomes, in fact, a two-member panel. Our objection to such a free application of the dialogue method is precisely the objection we raised against a panel of less than four members. This objection is largely removed if the two participants are sufficiently versatile, stimulating, and sufficiently informed on the various ramifications of the problem.

Values and limitations

The special value of the dialogue is the opportunity which it presents to secure the reactions of an expert on the specific questions in which the audience is most interested. At its worst, it can become little more than a series of stereotyped

questions and short, noncommittal answers. The real question probably is how best to use an expert when his time is available to the group. Should he be asked to give a speech, or should he be scheduled for a dialogue with a representative of the audience to draw him out and to ask the questions which are most immediate? The answer to this question will, of course, depend upon the circumstances. Often a speaker who is not ready to give a speech can be persuaded to take part in a dialogue.

Symposium

The symposium is a form of public discussion engaged in by three to five persons who present aspects of a problem through the medium of public speeches. It differs from the panel chiefly in the fact that it employs the public speech, rather than the conversational approach. Like the other methods that we have described, it is usually followed by a forum period.

Methods

The nature of the symposium is such that it is possible to assign subjects to each speaker in advance, and it is contemplated that each participant will make a direct preparation for his participation in the discussion. Preparation is something less of a problem here than it is in the panel because the failure to prepare is at once painfully and immediately identified with the individual who fails to give an adequate speech.

In making plans for the symposium, the chief problem is that of organizing the program of speeches. In general, two methods may be adopted: First, that of asking each participant to express his views on the problem as a whole, and, second, that of assigning some phase or aspect of the total problem to each individual. Our experience has been that the first method works better if care is taken to make certain that the leading points of view on the problem are represented. In other words, there should be sufficient diversity

in point of view among the speakers to be certain that needless repetition is avoided and that the more important interpretations of the problem are given a fair hearing. This method of organization enables each speaker to deal with the point of view on which he is best informed and in which he is most vitally interested. It is less likely also to result in a formal, arbitrary division of the subject which stifles enthusiasm and fails to capitalize upon the resources of the symposium.

If the problem is to be divided upon some other basis, it is possible to ask one speaker to define and to lay out the problem, another to analyze the problem, and others to deal with specific solutions. This method has the advantage of securing a more or less complete and logical development of the subject, but in most other respects it suffers in comparison with the first approach.

While we have defined the symposium as three to five public speeches on a problem, this definition has meaning for public discussion only if we make clear what kind of public speeches we have in mind. For example, three to five propagandistic orations would hardly constitute discussion in the sense in which we are using the term. Whether conducted around a table in an informal situation, or carried on in a large public meeting, discussion is still discussion! Unless the essential elements of cooperative deliberation are present, and unless the reflective, critical approach to the problem is maintained, a symposium is not discussion! The symposium has no meaning for our purposes here unless it is understood and applied in this context. This means that each speaker, no matter how sincerely he believes in the position which he is reporting, has the responsibility of explaining how and why he feels as he does. His speech is essentially expository, not persuasive. This, it will be recognized, is the denotative method of contributing, which we explained in a previous chapter. It is not an injunction against energy and enthusiasm in speaking, but it *is* an injunction against the use of persuasive or propagandistic techniques designed to win con-

verts without a thorough analysis and explanation of the position which is being presented. These remarks should not be taken as an attack on persuasion and propaganda. They may serve a very useful function in certain situations, indeed we believe that they do, *but they are not the methods of discussion!* The function of the symposium, taken as a whole, should be that of opening up a problem and giving it a thorough airing and ventilating in the interests of better understanding. The end is instruction and understanding rather than persuasion or belief. It is not a question of winning or losing adherents to a cause, but rather one of providing additional clarification and insight. What we are saying here obviously has implications for the attitudes of the participants as well. The atmosphere of the entire discussion should be that of spirited and forthright inquiry into a significant public question.

One additional point should probably be made about contributing in the symposium. The situation calls for ready, extempore speaking. As the symposium progresses, each speaker has a responsibility to adapt himself to what has been said by those who have preceded him. Such adaptations should be in the nature of recognizing agreements where they exist, pointing up matters of difference, and refraining from undue repetition.

The leader's task in a symposium, once the speakers have been assigned, is relatively simple. He must act as chairman of the meeting; introduce the speakers; make a brief, preliminary statement; provide such transitional statements as may be necessary as the different speakers appear; and, finally, make an adequate concluding statement. His chief task will come in the audience participation period following the symposium.

Values and limitations

The symposium is an excellent approach to discussion in a large public meeting. The public speaking approach to discussion is better adapted to large audiences and to large

auditoriums. It has the advantage, too, of stimulating more careful preparation on the part of the participants than some of the other methods we have considered. Its chief disadvantage is that the program may not be a discussion at all in the sense in which we are using the term. For example, some of the best *debates* we have ever heard have been scheduled as *symposia.* While we have not the slightest objection to holding good debates under appropriate circumstances, we do wish to insist that a debate is not a symposium. Of all the types of discussion, the symposium is most likely to take on the form of a debate unless its reflective, cooperative character is insisted upon and carefully maintained.

Forum-Lecture

A forum-lecture is a public speech designed to define, analyze, and interpret points of view toward a problem for the specific purpose of providing a basis for further discussion of the problem. Such a lecture is followed by a period of audience participation.

Methods

We can deal with the forum-lecture rather briefly because all that we have had to say about the attitude and approach of the symposium speaker applies here as well. The denotative method of contributing should be employed, and the attitude of the speaker should be that of inquiry rather than advocacy. In general, the pattern of the forum-lecture may take two forms: First, that of the man who is concerned mainly with reporting his own views on the problem, and, secondly, that of one who deliberately takes an eclectic position for the purpose of giving consideration to all of the leading positions on the problem. In either case, the five steps in reflective thinking (definition, analysis, suggestion of possible solutions, comparisons among these solutions, and consideration of the practical problem of putting the preferred solution into operation) may well serve as the basic

organization of the speech. Obviously, in the case of the man who is reporting his own point of view exclusively, this pattern will require some adaptation, but for the speaker who is interested in discussing the subject broadly, it provides an immediate plan of organization.

Values and limitations

The forum-lecture probably represents the best way to get a relatively new or different problem before an audience for purposes of further discussion of this problem. We may assume that it has the advantage of careful planning and orderly exposition. It is economical of time, and probably in most situations it enables the forum to make the best use of guest speakers. As in the case of the symposium, its chief weakness lies in the ease with which the speaker may seize upon the opportunity to make a campaign speech for some proposition in which he is interested. Such speaking, as we have seen, does not meet the criteria of good discussion.

The Forum

A forum may be conceived of as an audience participation period following some presentation, or as an institution in and of itself. Using this latter meaning of the term for the moment, we may refer to the many public and private forums which have been established throughout the country. Two of the oldest and most distinguished forums are the Cooper Union Forum in New York and the Ford Hall Forum in Boston. Under the impetus of the forum program of the United States Office of Education, many governmentally encouraged forums have sprung up throughout the nation. Contemporary interest in public questions growing out of unsettled world conditions has doubtless, also, been a factor in producing hundreds of private forums under the auspices of clubs, churches, and other community organizations. We shall not, however, be primarily concerned with the institutional problems of the forum in this chapter. As an institution, we believe that the forum has given an enormous

impetus to public discussion; that it is one of the more healthy signs of American democracy. In this chapter we shall be concerned with the forum in the sense in which we have used the term in the earlier sections of this chapter, as a period of audience participation following a panel, a dialogue, a symposium, or a forum-lecture. Such participation usually takes the form of a question-and-answer period or a round-table follow-up.

Question-and-answer period

Since the leader is probably the most responsible person in the question-and-answer period, we shall discuss the methods of the period very largely from his point of view. When the opening presentation has been concluded, the leader's first task is that of referring the problem to the audience in such a way as to stimulate discussion. Many leaders are especially apprehensive about this point in the discussion, lest there be no response from the audience when the opportunity is presented. While our experience has been that this apprehension is seldom justified, there are certain things that the leader can do to guard against this contingency. He may sum up the panel, symposium, dialogue, or lecture in such a way as to focus attention on the more vital and more controversial issues. A similar device is to raise a series of questions which will serve to suggest areas in which questions from the audience will be helpful. The leader may, if he wishes, put the first question to the speaker. The confident assumption on the part of the leader that the audience will wish to ask questions, however, will probably help about as much as anything else. Certainly he should give no indication that he is expecting difficulties in getting responses.

We have discovered that there is one technique used by some forum leaders which almost invariably backfires. We wish to warn against it. Do not attempt to limit the first questions from the audience to any particular aspect of the subject. Time and again we have attended forums where it

was perfectly evident that the audience was willing and anxious to participate. The leader, in his anxiety to have the questioning begin at the point which he thought was the logical subject on which to have the first questions, discovered to his dismay that not a soul in the audience wanted to talk about this point. The result was, of course, a very large and ominous silence, and the enthusiasm and interest built up by the speakers was lost. The purpose at the outset is to get questions from the audience. These questions, obviously, will be on matters which have kindled the interest of different individuals, and they are likely to deal with widely different aspects of the problem. Once the audience has warmed up to the business of asking questions, and once the initial timidity or reluctance has been dispelled, then the logically minded leader may attempt, if he wishes, to bring some order out of the chaos.

There are several methods of handling questions from the audience. One method is to have the members of the audience write their questions out and submit them to the chairman on slips of paper which have been provided earlier in the meeting. In the brief recess between the speeches and the forum, the leader then may sort, arrange, and even edit these questions if he finds it necessary to do so. The chief advantage of this method lies in the fact that it is possible for the leader to arrange the questions in such a way that there is some logical progression of ideas in the forum period. What is more, it largely eliminates the possibility of disruptions by cranks and other overly zealous individuals. The method of allowing questions from the floor, however, is greatly to be preferred to written questions. It makes for much more lively, spontaneous discussion than the other method. One question may suggest other questions, and the audience has the benefit of the oral presentation of the question. A leader may follow the practice of having all questions from the floor directed to himself as leader. He then repeats the question, if necessary, so that it may be clearly understood by every one present and refers it to the speaker on the

platform whom he thinks is best qualified to answer it. This rather circuitous approach is often relaxed, especially in small meetings, by allowing the questions to be put directly to speakers on the platform. In such cases the leader intervenes only when there is some confusion or misunderstanding, or where it is necessary for him to indicate which member of the audience is to be recognized when several request the floor.

Often the leader will have to impose some limitations on the length of the questions. Spirited members of the audience who are anxious to participate may use their privilege of asking questions for the purpose of making a speech. Some forum speakers likewise err in this same direction in answering the questions. The questions normally should be put in not more than twenty-five words, and the replies should be relatively brief and to the point. On the other hand, where the situation permits, the leader may apply these regulations with considerable flexibility. Often the forum gains by brief comments from members of the audience, and it may even be possible to allow some exchange of opinion among the members of the audience so long as order is maintained and each speaker makes his remarks heard by the entire group. It can be seen that this relatively loose and informal application of the question-and-answer period may very easily degenerate into a bedlam unless the leader watches it closely. The possibility of profitable discussion from members of the audience, other than brief questions, depends very largely on the size and character of the audience and the discretion of the leader.

Round-table follow-up

In certain circumstances it is possible to divide the audience into small groups for the purpose of discussing the problem developed by the panel, dialogue, symposium, or forum-lecture. These round-tables may take the place of the question-and-answer period or they may follow such a period. This procedure enables every member of the audi-

ence to translate what he has heard into familiar terms and to secure the benefit of group criticism on his own reactions to the speakers. It is often difficult, if not impossible, to provide such reinterpretation and orientation in the large group, especially if the forum has to be limited to questions and answers.

The general principle of alternating large discussion assemblies with group round-tables has been found to be one of the best methods of handling large classes and conferences. The round-tables profit by the information provided in the assembly, and the assembly benefits by the added stimulation which comes from the component groups. To insure this reciprocity it is often wise to use one or more assemblies for the purpose of hearing reports from the round-tables. This program may be organized as a symposium with representatives from the several groups as speakers.

Throughout this chapter we have emphasized the importance of carrying the principles and methods of group discussion over into public discussion. Many public meetings which are called forums or town meetings, or are otherwise labeled to suggest public discussion, make only a feeble gesture in the direction of real discussion. Lectures, campaign speeches, and pep rallies are not public discussion in the sense in which we are interested in it in this chapter. Many so-called forums, like the modern drugstore, dispense a little bit of everything. The forum as an institution and the various methods of public discussion have value as discussion in about the degree that they approximate the conditions of cooperative inquiry and reflective deliberation.

Questions and Exercises

Since the student was introduced to group discussion in Chapter 10, it is possible to move naturally and easily into these exercises in public discussion.

1. *Panel discussion.* Divide the class into groups of five to seven persons. Appoint a leader for each group. Assign different

problems to each group. Discussion outlines should be submitted as usual.

Each group will conduct its discussion before the entire class, following the instructions for panel discussion given in this chapter. Follow each panel discussion with a ten-minute open forum.

Criticize the discussions from the standpoint of individual contributions, adequacy of ideas, leadership, and effectiveness in communication.

2. *Symposium.* Again divide the class into groups of five to seven persons. Appoint leaders and assign special problems to each group. Ask each person to prepare a five-minute talk in which he develops his point of view on the problem assigned to his group. Conduct these symposia before the entire class, with the leader introducing each speaker and leading a ten-minute forum following the speeches.

This assignment may provide the basis for the first *public speeches* in the class. For this reason, it is unwise to focus attention on the "fine points" of public speech; rather, consider adequacy of ideas and general effectiveness in communication. This question may be raised: What are the similarities and some of the differences between conversational discussion and discussion through the medium of public speeches?

3. *Forum-talks.* Ask each member of the class to prepare a six-minute speech on a problem of his own choice. The purpose of each speaker will be to open up the problem and to discuss briefly his own point of view in relation to other leading positions on the problem. Invite questions from the class on the problem developed.

4. *Dialogue.* Divide the class into groups of two and conduct dialogues before the class. This assignment is difficult, but it has the merit of placing speakers in a situation where they are obliged to contribute.

CHAPTER 14

Public Speaking

The public speech is presented by a speaker to an audience. The audience may be relatively large or small and the speech may be relatively formal or informal, but the circumstances are always that of one individual communicating his ideas and feelings to others in a *co-acting* situation. The ancients recognized three great types of speeches: the deliberative, the forensic, and the epideictic, or demonstrative. Later writers have added the sermon and lecture, making five main divisions, and have discussed many subdivisions of each of these five types. The purposes of public speech may be to actuate, to convince, to inform, to impress, or to entertain. Regardless of type and purpose, however, there are certain basic principles which are of practical value in preparing and presenting the public speech.

It is possible to approach public speaking from at least four points of view: The traditional approach is *rhetorical,* wherein public speech is conceived as an art, and an attempt is made to lay down formal principles governing its practice. Aristotle's *Rhetoric* and countless other lesser works are in this tradition. Again, it is possible to conceive of public speech as a function of sound *mental hygiene.* The position here taken is that the truly balanced, adjusted individual is the vital factor in the speech situation. The integrated personality contributes to the effective speech. Still others would emphasize the importance of *subject matter,* some to the extent of contending that one who knows a subject is able to speak about it, and that inability to speak about it is *prima facie* evidence of fragmentary or otherwise inadequate knowledge. Plato comes close to this position in his *Gorgias.* A fourth basis for studying and interpreting public

speech is found in the *semantic approach.* Here the chief concern is with language and thought. The semanticist would have us pay particular attention to the vagaries of symbols and meanings in behalf of accurate statement. The semantic goal is symbolizations which report the world correctly, in the same way that a reliable map records the territory represented.

In this chapter we shall draw practical suggestions for the speaker from all four of these approaches. They are not mutually exclusive or contradictory; they are complementary.

Subject-Matter Factors

It does not follow that one who knows a subject can speak competently about that subject. Most of us have had practical experience which will bear witness to this. On the other hand, it is an invariable rule of good speaking that one must know his subject well if he expects to talk about it competently. Our experience in listening to student speakers of all kinds, and to others who might object to being called student speakers, has been that many of their difficulties spring from the fact that they have little or nothing to say. It is exceedingly difficult, if not impossible, for a speaker to use his voice effectively, or to use his body effectively, in a situation where he knows that he is inadequately informed on the subject that he is trying to develop. Our experience has been that if a speaker has something to say, something that is really important to him, something that he believes that he understands and comprehends, he is likely to have a keener desire to say it; and, what is more, he is likely to present it much more effectively than he would otherwise be able to do. Many minor difficulties will take care of themselves and much of the nervousness and stage fright that he might otherwise experience will disappear.

Any audience, whether the speech be delivered in the classroom or elsewhere, has reason to expect that the speaker will be at least something of an authority on the subject

on which he is speaking. Under ordinary circumstances it is not too much to expect that the speaker should know more about his subject than most members of his audience. At least, he should have something of significance to say. Unless this situation obtains, the atmosphere of the occasion is likely to be that of "piece speaking" and empty declamation. People ordinarily listen to speeches in order to get information and to share the attitudes and points of view of others. Little more than gesticulation and empty noise can result when the speaker doesn't know what he is talking about. You may be able to have a stunt or a performance under these circumstances, but you cannot expect a speech that is worth attention.

Choosing the subject

One of the most common queries met by the teacher of public speaking is, "What can I talk about?" The *Reader's Digest* and other predigested materials are thumbworn in a search for something to talk about. This is especially worthy of comment because it is a rare individual indeed who does not have within his own personal experience many subjects which could profitably be brought to the attention of others. This is where the initial search for a subject should begin—with oneself. If a speech is going to be successful from any point of view, the speaker must have a desire to communicate; he must have something that he wants to say. Explain the things you know about; argue for the things you believe in. Subjects just picked up for the occasion, without roots in the experience of the speaker, seldom have much vitality.

Effective public speaking is *purposive* speaking; that is, the speaker has a definite end in view; he is seeking a relatively specific response from his audience. In most circumstances this purpose should determine the subject and the materials of the speech. While the specific purposes of speech may be as many and varied as the countless interests of persons who give speeches, it is helpful to recognize five general ends. These are *to actuate, to convince, to impress,*

to inform, and *to entertain.* A speaker may attempt to influence the overt behavior of his listeners—to vote for John Doe, to contribute to the community chest fund. He may seek "mental" acceptance or endorsement of an idea or proposition where no direct action is contemplated. He may wish to commemorate an individual or an event, to make the audience feel intensely, as in a eulogy, a dedication, or similar addresses on special occasions. But many times the speaker's only purpose is to report a situation, or to make an idea or concept clear, as in expository speaking. And, finally, the chief end in view may be good fellowship—to amuse or otherwise to entertain the audience, as in the typical after-dinner speech. An examination of speeches and speech situations will reveal that these general ends represent the usual goals of the speaker. The specific purpose of almost any speech will fall into one of these five categories. Since methods vary with purpose, an understanding of the general ends is helpful in building the speech. In preparing a speech it is wise (1) to know what your general end is, and (2) to state in a single, concise sentence what your precise aim or purpose is. This sentence may or may not be given to the audience, but it is helpful in keeping you on the track throughout the preparation and the delivery of the speech.

Investigation

One's experience may provide a well-motivated subject, but it is almost invariably true that the speaker must go beyond this experience in preparing a good speech. The library is usually the best source for this supplementary information. It is not unreasonable to expect a student speaker to make a careful investigation of his subject. Speeches built around a single magazine article or newspaper editorial are seldom worth listening to. To give an effective five or six minute speech the speaker ought to have enough material available to speak for an hour; then he can boil these materials down, and select and choose in the light of the particular point which he wishes to make.

This is probably not the place to discuss library usage, standard books of reference, the *Reader's Guide to Periodical Literature,* and other such aids to library research. We must assume that the mature student knows how to use the library. This is the place, however, to emphasize again and again the importance of having something to say before attempting to give a public speech. Most teachers of public speaking take the position that a speech which gives evidence of fragmentary and inadequate knowledge is not worth criticizing, because so many of the difficulties which one is moved to criticize will disappear when, and if, the speaker learns that he must know what he is talking about before he can expect to give an effective speech.

Rhetorical Factors

The usual divisions of rhetoric are: arrangement, invention, style, delivery, and memory. We shall take up each of these here, with the purpose once again of evolving practical suggestions for the speaker.

Arrangement

Arrangement has to do with the selection and ordering of the materials for presentation to a given audience. Here we shall be concerned specifically with the divisions of the speech, with the general outline and organization of the speech, and with the problem of transitions.

Divisions of the speech. Experience has shown it to be helpful to recognize three main divisions of the speech: the introduction, or opening; the body, or the development of the thesis; and the conclusion.

The introduction to almost any speech must serve at least two purposes: First, to arouse interest in the subject of the speech by capitalizing upon the initial attention which practically always greets a speaker as he faces an audience, and, second, to provide such introductory information as is necessary for an understanding of the subject. Perhaps the best

approach to this business of turning attention to the speaker into interest in the subject is for the speaker to ask himself this question: "Why should this *audience* listen to *me* discuss this *subject* on this *occasion*?" This question will direct him at once to the four important aspects of any speech situation: the audience, the speaker, the subject, and the occasion. If adequate motivation for the speech is to be given, it must be found in one or more of those factors.

The speaker must usually give his audience some reason for wanting to listen to him discuss the particular subject on the particular occasion, unless this is done for him by the chairman in introducing him, or by the speaker's reputation plus the circumstances of the occasion itself. If the peculiar needs or problems of the audience have given rise to the speech, the speaker may point this out. On other occasions the motivation may be found in the speaker himself. He may have had some special experience or training which makes it especially fitting and appropriate for him to discuss this subject. This fact more than anything else may be the reason why his audience will wish to hear what he has to say. If such is the case, it is not a violation of good taste to refer unobtrusively to these facts. Most frequently, perhaps, the subject itself, its intrinsic significance, its timeliness, or its unusual character may be used as the basis for an opening. Finally, it may be the occasion which explains why the speech is being given and provides the necessary motivation.

Whatever factor is used to motivate the speech, it is often possible to cast the opening remarks in some form which will in itself help to secure interest and attention. A striking quotation, a vivid word-picture, or a concrete example may serve the purpose. On other occasions a forthright statement of purpose, simply and directly made, may be the most effective device.

As we have already intimated, it is sometimes necessary to give the audience certain preliminary information in the introduction if they are going to be able to follow the speaker's thought. Such preliminary information may include a

definition of terms, a brief history of the question, a clear statement of purpose, and, in some instances, a partition of the subject. By a partition is meant simply a statement of the main points or divisions which the speaker proposes to take up in the speech. As many of these steps should be included as the speaker thinks is necessary to provide his audience with an adequate orientation with respect to the scope and plan of the treatment to be given. In any event, these factors should be handled as briefly and tersely as possible. The introduction should always be as short as possible—only as long as necessary to accomplish its purpose.

Assuming that the introduction has given the audience some reason for wanting to listen to the speaker and has provided them with whatever preliminary information is necessary, then the body of the speech contains the development of the subject. Here the speaker presents his proof, his exposition, or whatever is demanded to accomplish the purpose of the speech. These materials should be organized around one, two, three, or more main points or central ideas. Each of these, in turn, should be given appropriate support. The principles of outlining, discussed on page 346, will be of service in arranging and developing the ideas of the speech. Two factors of considerable importance, however, should be emphasized here: *simplicity* and *vividness*, which are the keys to effective development of the body of the speech. By simplicity we mean an organizational plan or pattern of the speech that is easily grasped and comprehended. By vividness we have reference to the constant use of examples, illustrations, and careful choice of words and sentence structure, which will serve to bring the points of the speech home to the audience. A complicated structure developed in abstract and general terms is seldom, if ever, effective in speech composition. Make one or two points in the speech and then exemplify and illustrate them abundantly. In other words, keep driving away at a few simply put ideas, coming at them first from one point of view and then from another. This is the way to get ideas across, to make them stick, and to make

them count for something in the behavior of the audience.

The conclusion, like the introduction, has two principal functions: First, to summarize the ideas of the speech, and, second, to give emotional reinforcement to the message of the speaker. A summary may be accomplished by a brief recapitulation of the main points developed; by a periodic sentence which brings the principal ideas of the speech together in relation to the conclusion drawn; by a quotation which epitomizes the argument of the speech; or by any other device which serves to focus attention on the central ideas and to draw the ends together. If the speaker can then go beyond this to stir the emotions of his listeners through a plea for the acceptance of his message, he may make deeper and more lasting impressions, which will count for more in the lives of his listeners. An emotional appeal is not just a purple patch tacked on to the end of an otherwise drab and dreary performance. It should permeate the entire speech and reach its maximum force in the final conclusion. It should spring from genuine feeling on the part of the speaker and be transmitted to the audience through his voice and action, as well as through the words he utters. Such a plea may be put in strong, forceful language, or may be stated simply, with quiet intensity. The temper of the speaker, and the purpose, and the nature of the occasion will determine its nature and the propriety of its use.

Outlines. The outline is the blue print of the speech. As such, it provides the basic organization for the speech, including the introduction, body, and conclusion. Ability in outlining is an essential skill for the speaker; without it he is tremendously handicapped in almost all types of speaking.

The most useful outlines are of two general types: *logical* and *topical*. The logical outline is designed especially to organize argumentative speech or reasoned discourse. It is characterized by the fact that each of the subpoints in the outline is presented as a *reason* in support of the proposition to which it is subordinate. Thus, a logical outline consists of a series of propositions or premises arranged with proper

regard to subordination. Complete sentences are essential to this kind of organization. A check on the logicality of the outline may be provided by ascertaining that the word "because" or "for" may be used as a connective between each proposition and each premise given in support of it.

Topical outlining is peculiarly adapted to expository speaking, or to description or narration. In the topical outline each subtopic stands as an *explanation* of the point to which it is subordinated. The relation between any given topic and the subtopics listed under it is that of whole to part. Depending upon the nature of the composition, the subpoints, then, may be descriptive, narrative, or expository parts of the idea expressed in the main heading. It is possible, but not always essential, to use complete sentences in this kind of outline. Words or phrases will often suffice.

Certain fundamental principles must be observed in all types of outlining, whether it be logical or topical. The first of these is *coordination.* By coordination is meant a series of generically related points, all of which have one or more important elements in common. The principle of coordination is violated when foreign or unrelated ideas are introduced into an otherwise homogeneous list. The second principle is that of *subordination.* Topics or reasons should be subordinated to others on the basis of some significant relation which obtains between or among them. This rule is violated when subtopics are introduced which bear no significant relation to the topic to which they are subordinated. Another basic principle of outlining is *discreteness.* That is to say, each point in the outline should represent a separate and distinct idea in its own right. The principle is violated when points overlap, merge, or are otherwise indistinct and confused, one with another. *Sequence* is a fourth principle of organization. Effort should be made to arrange the points in each coordinate list in some kind of significant order or progression. Common sequences are those of time, place, magnitude, or such order as may be dictated by the proof requirements of a thesis. The fifth principle of outlining is

that of *symbolization.* Every point in the outline should be marked by a symbol which at once designates the degree of subordination and also its place in a coordinate list. What is more, it is wise for a speaker to adopt some set of symbols and to use them consistently in all of his speech outlines. Experience has shown that this rather simple expedient will avoid considerable confusion. We recommend Roman numerals to indicate the main points in a speech, capital letters to indicate the first series of subpoints, and then Arabic numerals and small letters.

The careful observance of these principles in drawing up the outline of the speech will do more than anything else to secure unity, coherence, and emphasis in speech composition. As a matter of fact, unity, coherence, and emphasis are very largely functions of these principles.

Transitions. Transitions often present a serious problem to the beginning speaker. That is to say, having concluded one point in his speech, he finds it difficult to get on to the next. This difficulty may be a sign of faulty organization in the speech, in which case attention should be given to the outline; or it may be that the speaker is not very adept at building bridges from one point to another. If such is the case, it will be helpful to get acquainted with some transitional terms, such as: "another point that I wish to consider," "a second matter of some importance," "further in relation to this topic I wish to say," "it should be added that," "or we may illustrate this matter from another point of view." These and many other such expressions are useful equipment in the speaker's vocabulary. Often a transition can be accomplished by summarizing tersely what has been done and briefly partitioning what is to be taken up next. In no case should the speaker allow this transitional language to become stereotyped, hackneyed, or needlessly obtrusive. In some types of speeches, especially argumentative and expository addresses, it is more important that the structure of the speech emerge clearly in the minds of the audience than it is in other types of speeches. Someone has said that every

speech should have a skeleton, but that there is such a thing as making its bones rattle too much. Granting this, it is likely, however, that most of us would prefer some evidence of over-organization to the jelly fish type of speech which shows no semblance of form or structure.

Invention

It is possible to distinguish three great modes of persuasion or appeal which operate in public speech. The first of these is a direct, logical appeal; the second is evinced through the character and personality of the speaker; and the third is an appeal to the emotions of the audience. These three modes of persuasion, here using persuasion in the broadest possible sense, are operative in all types of speaking; or, putting it differently, they are the means by which a speaker may hope to secure the desired response from his audience in any kind of speech.

Direct, logical appeals. The direct, logical appeals may be roughly classified as *argumentative* and *expository*. The argumentative speaker typically attempts to secure belief through reasoned discourse. The appeals here used, then, may be classified as reasons; they are the kinds of reasons or arguments which a speaker may offer in support of a proposition. Such reasons may take the form of signs, causes, analogies, or examples. When a speaker offers a sign as a reason, he attempts to give some kind of indication that a certain condition or state of affairs actually does exist. When he gives a cause, he attempts to explain *why* this condition exists. For example, we may take the fact that picket lines have been formed around the plant as a likely sign that a strike has been called. The cause of the strike, it might be contended, is an attempt on the part of the workers to improve their wages, hours, or working conditions. A third type of reason is one which provides an example or an actual case in point; and the fourth is the analogy, wherein a comparison is made between two cases on the assumption that if they are alike in a number of essential respects, it is

likely that they will also be alike in the respect under question. Thus, it might be argued that a unicameral legislature ought to work in Kansas because such a system has worked in Nebraska.

It will not be possible for us here to go into the conditions governing the validity of these different kinds of argument. Suffice it to say that the function of these appeals is to secure belief or conviction by establishing the probable truth of the proposition in question. This can be done by presenting reasons which supply signs, causes, examples, or analogies.

It should be noted in this connection that the structure of such reasoned discourse may be best set out in what we have described before as logical outlining. What you have in such logical outlining, in fact, is a series of rhetorical syllogisms. For example, when it is argued that a strike has been called in the plant because a picket line has been formed, all that needs to be done to get the complete syllogistic form is to supply the missing major premise; namely, *If a picket line has been formed, a strike has been called.* In a similar manner, the argument that a strike has been called because the men are attempting to get better wages, may be easily expressed in syllogistic form by adding the assumed major premise. As a matter of fact, wherever a reason is offered in support of another proposition, it is possible to obtain the syllogistic structure of the argument by supplying the missing premise. What is more, in most speaking and writing, it is almost invariably the major premise which is omitted. It may be said of a logical outline, then, that typically the main points are minor premises in syllogisms wherein the proposition they are adduced to prove is the conclusion. These main points, in turn, then become the conclusions for syllogisms in which the points immediately subordinate to them are minor premises. In terms of the relationship which each of these premises bears to its conclusion, as we have said, it may be classified as an argument from sign, cause, example, or analogy.

The direct logical appeals about which we are speaking

in this section take the form of *expository* support when illustrations, examples, stories, word pictures, quotations, statistics, and the like are offered in the interests of clarifying and explaining the subject. Here again we wish to emphasize the practical importance of the use of these devices in securing vividness in the speech and, through vividness, added force and understandability.

Ethical persuasion. Since the days of early Greek rhetoric, that kind of persuasion which is evinced by the character of the speaker has been known as *ethos,* or ethical persuasion. It is a commonplace which need not be argued here that the impression which the audience forms of the speaker is, in itself, a persuasive factor of great practical importance in public speaking. It is not a question of whether or not the speaker will consciously employ ethical persuasion in the speech; he will exert this kind of persuasion to his advantage or disadvantage whether he wishes to or not. It is inevitable that the audience will form impressions of the speaker from his voice, from his actions, from his diction, from the arguments which he chooses to present, in fact, from every conceivable factor entering into the speech situation. And they will react to him in terms of their own beliefs, customs, habits, and actions.

Aristotle's analysis of ethical persuasion probably remains today the most astute and, at the same time, the most helpful treatment of the subject. He points out that ethical persuasion is a function of the audience's impression of the speaker's intelligence, character, and goodwill. In other words, if the speaker gives evidence that he is a capable individual, reacting intelligently to the matter which he is discussing, and if he appears to be a man of honesty and integrity, and a man disposed to consider sympathetically the needs and problems of the audience, then this man is one who will be accepted by the audience; and by virtue of this acceptance, he will exert a persuasive force in the speech situation. Intelligence, character, and goodwill may be translated to mean

knowledge, sincerity, and sympathy. If a man shows that he knows what he is talking about, that he is deeply and honestly sincere in what he is saying, and that he is genuinely interested in his listeners and concerned about their well-being, we may expect that the audience will give credence to his ideas in a way that they would not be likely otherwise to do.

What does this analysis mean so far as the individual speaker is concerned? The orator has been defined as the good man skilled in speaking. We shall not go into the general acceptability of this definition, or into the ethical question which it seems to raise, but certainly no speaker can avoid the practical conclusion that what he is as a man is very likely to be revealed when he speaks. In the great majority of cases, artifice and simulation are indeed poor substitutes for the hard work that is required in mastering one's subject, for the honest conviction and devotion to ideals out of which genuine sincerity springs, and for the bigness of heart and warmth of personality which prompts an individual to respond to the needs and problems of others. Artifice and simulation are poor substitutes for the real thing, because they are almost always revealed in a thousand different ways when a man begins to speak.

Emotional appeal. An appeal to the emotions is an attempt on the part of the speaker to affect the perception of the listener in such a way that his response will be different from what it would be otherwise. As a mode of persuasion it is based on the assumption that men who are moved emotionally will respond more deeply to stimuli than they would in the absence of this emotion. Whereas ethical persuasion resides in the speaker himself, the emotional appeal has its basis in the listener.

On this mode of persuasion we have two suggestions to offer: First and foremost, we believe that any speaker who is trying to stir up an emotion in someone else should actually experience the emotion which he is trying to evoke.

Whether or not this very old precept applies to the actor or to the interpreter is a quite different question, but it certainly applies to the public speaker. The best way to make an audience experience grief, fear, or the emotions associated with loyalty, love of home and family, is for the speaker actually to experience this emotion himself, and to show it in his voice and in his actions. There is one word of caution to be given in connection with this advice, and that is that the speaker must always maintain a certain reserve and a certain control of his emotions. He must discipline himself in this way not only because such reserve suggests the emotion more effectively to the audience, but also because the speaker, in his capacity as leader of the group, must maintain complete possession of all of his faculties. The speaker who lets his emotions run away with him, and manifests his feeling in shouting and violent action, is likely to lose rather than gain the respect and sympathy of his audience.

A second bit of advice in the matter of evoking an emotional response from the audience is always, so far as possible, to use concrete and specific materials in a speech. You cannot expect anyone to feel very deeply about generalities and abstractions. If you are going to induce feeling, you are going to have to get down to specific cases, to individuals, and, what is more, these are going to have to be close *to the experience of the audience.* For example, one might tell an audience that there were 100,000 needy families in the city of Chicago and not get any perceptible emotional response. But let him take the case of a specific family and tell in vigorous, graphic language about their trials and misfortunes; let him, figuratively speaking, take the listener into the home of this family and see the want and destitution for himself, and then he can expect some kind of emotional response. Abstractions and purely intellectual conceptualizations will leave the average person cold. In order to become materials for an emotional appeal they must be translated into specific, concrete cases.

Style

We shall mention here some of the more important qualities of good oral style. Of these, *clarity* must be placed first; and clarity is very largely a function of simplicity and economy of expression. Other things being equal, simple words are preferred to complex, polysyllabic words, or to words which for one reason or another are unusual, strange, or likely to attract attention to themselves. Relatively short, simple sentences are clearer than long, involved sentences. Redundancy, verbal parading, and rambling should be avoided in the interest of straightforward, relevant expression which goes directly to the point. As Spencer puts it:[1]

> A reader or listener has at each moment but a limited amount of mental power available. To recognize and interpret the symbols presented to him, requires part of this power; to arrange and combine the images suggested requires a further part; and only that part which remains can be used for realizing the thought conveyed.

This principle is probably truer of oral composition than it is of written because oral composition must be instantly intelligible or it is lost. A style that is simple, clear, and direct will allow the hearer to give more time and attention to the idea.

A second quality of good oral style is *vividness*. The choice of words and figures of speech is the important element here. Specific, concrete words are usually more vivid than terms which are general and abstract. "The more general the terms are, the picture is fainter; the more special they are, 'tis the brighter."[2] Figures of speech should be used with this same principle in mind—to convey the idea more vividly and more forcibly to the hearer. They should not be employed as mere ornaments or tinsels in speech.

Appropriateness as a quality of good style is relative to

[1] Spencer, Herbert, *The Philosophy of Style*, quoted by Lane Cooper in *Theories of Style*, p. 274.

[2] Campbell, George, *The Philosophy of Rhetoric*. New York: Harper & Brothers, 1877.

the speaker, the occasion, the subject, and the audience. For example, to use a heavy, elevated style in developing a trivial subject on an informal occasion is one of the surest ways to effect the ludicrous. It is clear, too, that a style which one speaker can use to an advantage may not be adapted to another. Likewise, style often requires adaptation to the audience. You can talk effectively to an audience only in *their* language. The important point is that the mode of expression must be adapted not only to the ideas and feelings that the speaker is trying to convey, but to the experience of the audience as well.

Perhaps the best way to give some indication of stylistic variations which may be used to achieve appropriateness is to distinguish between the three types of styles mentioned so frequently in the literature of the subject. The first of these is the *plain style,* consisting of relatively loose sentences and an easy, conversational flow and manner adapted to informal speaking. In general, most modern speakers make some attempt to approach this plain style. It is advocated and preached by most of the modern textbooks on the subject. Its effectiveness lies in its simplicity and in the way in which it is accommodated to conversational inflections. Properly used, it suggests ease and sincerity on the part of the speaker.

A second recognizable style can be defined broadly, at least, as a smooth or *periodic* structure. Here special attention is given to balance and rhythm. Among American orators, Henry W. Grady is probably the greatest exponent of this style. Each sentence is rhythmically complete, even if it is sometimes redundant because of the necessity of adding words to complete the rhythm. The sentences follow one another, as it were, swell on swell, balanced, even, stopping just short of a metrical effect. Repetition in parallel construction is typical in the periodic style. As a matter of fact, the very term "period," as it is here used to describe the style, means a unit of expression of language which is rhythmically complete. The critic uses the term in this same sense,

for example, when he says that the orator spoke "in rounded periods." This style has its strength in the beauty of rhythm and cadence. If not carried to excess, it can give to prose something of the charm and beauty of poetry. It is generally a more suitable medium for occasions on which the speaker is under something of an artistic obligation.

A third characteristic style, often referred to as the *grand style,* is more elevated than either of the other two. It is elevated in the sense that it is adapted to the expression of great thoughts on great occasions. Among the ancients, Demosthenes was capable of this style; among our own speakers, Daniel Webster is an excellent example. Here the sentences are typically longer and stronger, and heavier words are used. The total effect is a more powerful, massive composition, more rugged and individualistic than the period, transcending the bonds of rhythmical unity and achieving force through its own rugged power.

These descriptions of the different styles of speaking are given here largely for the purpose of illustrating, in a rough way at least, the range of variation available to the versatile speaker whereby he may accommodate his style of speaking to time and place. We are of the opinion that too many student speakers commit themselves to mediocrity through the constant use of the plain style. The result is that much of the beauty and power and emotional force of which language is capable is absent from their speeches, drained out, as it were, in a dry, matter-of-fact, constrained way of speaking. The plain style as it is used by many speakers today appears to be little more than a condescension to a convention which derives from a tendency to look down one's nose at oratory in the grand style. If oratory in the grand style means the pompous mouthing of empty phrases, we can agree that the world is better off without it, but if a more elevated style means the ability to invigorate language, to give added emotional force to really significant ideas, then we should like to see some of our student speakers attempt to achieve that kind of stylistic distinction.

In this matter of style, the average student will probably profit most from reading great speeches, listening to great speeches, and assiduously attempting to develop a style of his own. If not carried too far, or practiced slavishly, some attempt to analyze and imitate the style of great speakers may serve as an excellent means of improving style.

Delivery

All ideas and feelings communicated through speech are conveyed through two types of symbols: audible symbols and visible symbols. Putting it another way, the two elements of basic importance in delivery are the vocal factors involved and bodily action. We shall offer a few practical suggestions here concerning the effective use of these two types of symbols in public address.

Vocal factors. The two requisites for the proper use of the voice in public speaking are audibility and understandability. To these two very utilitarian factors might be added the beauty and charm of a really good voice. Very little needs to be said about the importance of making oneself heard in public speech. While this is so obvious as to appear to require no attention, the constant failure of so many speakers to achieve audibility, particularly in the first part of a speech, leads us to stress this point. Speakers who have voices which could be heard for a mile, for some strange reason or another, often are unable to be heard beyond the first row in a classroom. The remedy readily suggests itself. You have heard it before. Talk loud enough to be heard easily and comfortably by everyone present.

Understandability is a somewhat more complex function of voice and diction. Failure to enunciate clearly often reduces understandability even though the volume may be entirely adequate. To put it very bluntly, one cannot expect to be understood if he talks as though he had a mouthful of oatmeal. Poor enunciation can usually be corrected by more attention to the individual sounds; by clipping out words more clearly, precisely, and distinctly; by opening

one's mouth when speaking; and by working the tongue, teeth, and lips more actively. While overly precise speech is likely to attract attention to itself through its very primness, at the same time this possibility is hardly an adequate apology for the indistinct mumbling which we get from so many speakers.

Vocal variety is another factor which contributes to understandability. We have in mind here, especially, variations in force, pitch, quality, and time. Much of the meaningfulness of speech is to be found in the significant variation of these factors. The typical speaker will do well to scrutinize his voice from this point of view and to make some effort consciously to widen his vocal range with respect to these factors. This is something that almost anyone can do, regardless of the basic quality of his voice. There is little reason for a monopitch, a monoforce, or for monotony in time and quality; the usual cause of vocal monotony is the indifference of the speaker.

Bodily action. By bodily action we have reference to position movement in speaking—to whatever meets the eye. It is involved in taking the platform, leaving the platform, in moving from one position to another during the speech, and in making gestures. Unfortunately, an enormous amount of nonsense has been written on this subject. Bodily action is of great importance to the speaker, both from the standpoint of freeing himself for more effective communication and from the standpoint of conveying his meaning to the audience; but precise instructions on how to stand and gesture, we think, do more harm than good. We shall deal here with four basic principles which should always be observed. The first of these is that movement of any kind, to be effective, graceful, natural, and vigorous, must be *coordinated* movement. That is to say, all parts of the body must work together as a single unit, even though the more obvious overt movement may be made by the hands, the head, or any other part of the body. Try, for example, gesturing with your right arm without moving any other part of your body. The

effect is a detached, pumphandle-like gesture which is awkward and stilted, totally lacking in force and grace. Only as the body responds totally and sympathetically do movements of any of its parts appear natural, easy, and effective.

A second principle is that the entire body should be alive and *animated* while speaking. This does not necessarily mean that there should be wide, sweeping movements of the arms and hands. A person can gesture eloquently by almost imperceptible movements of the head, shoulders, and torso—movements which given evidence that the speaker is physically alert and actively responding to what he is saying. To people who say they don't like to gesture in a public speech, the reply can be made that any speaker who faces an audience must inevitably make use of visible symbols in one way or another. If he stands before the group as stiff as a board or if his muscular disposition is languid, apathetic, and enervated, these factors have their effect both on the speaker and the audience. What we are saying is simply this: *So long as the audience can see the speaker, he cannot avoid communicating through visible symbols.* What is more, it is quite possible for him to talk one language with the words that he utters and a quite different language with the visible symbols which he uses. An animated body indicates alertness, interest, and energy. Such animation is a function of muscular tonus, which means a readiness to act, and shows itself in sympathetic movements as the speaker responds to the various emotions which he experiences as he speaks.

A third principle of bodily action is that of *integrating* the movement of the body with the ideas being expressed. Significant gesture and movement of all kinds in speech should be related to the ideas being developed by the speaker. The motivation for gesture should arise from a natural impulse to clarify a point or to give emphasis to the thought being expressed. Unless movement is thus meaningfully related to ideas, it is likely to be random and ineffective. The normal individual will have an impulse to use his hands, his face,

and his body as aids in description, narration, and exposition, and as an aid in helping him to drive home a point in persuasive speech. If he will respond to these impulses in a free and uninhibited manner, the movement is likely to be integrated with his ideas.

A fourth principle of importance in gesture is that of *reserve.* A movement should be free and uninhibited, but it is a mistake ever to give the impression of going the limit. There is greater strength in reserve and control than there is in complete abandon.

Most of what we have been saying about voice and bodily action may be summed up in the concept of *directness* in delivery. It is the most important factor in delivery! Writers on the subject talk about audience contact, eye contact, rapport, polarization, and the conversational mode. All of these are bound up in this concept of directness. It means that you are clearly talking *to* your audience, not simply *in front* of them. It implies not only physical directness (facing the audience and looking at them), but also mental directness (an awareness of what you are saying while you are saying it and an awareness of the reaction of the audience). The audience responds to the symbols used by the speaker, and the speaker, in turn, responds to his audience. Directness is achieved in the degree that this reciprocation in response is established, and the speaker reacts to it to adjust himself more perfectly and harmoniously to the situation. Such reciprocation and adjustment is often seen at its best in good conversation; hence the kind of directness which obtains in conversation may profitably be sought in public speech. The conversational quality in public speaking does not imply, as is often thought, that the speaker should adopt a plain, restrained manner of speaking. A speaker can be conversational and direct even though he uses a grand style. Force, power, and deep feeling are not strangers to conversation, and certainly they should not be excluded from the public speech.

Memory

In general, there are four ways in which a speech may be delivered. It may be given from memory, read from a manuscript, presented extemporaneously, or given as an impromptu speech. While there is a place in certain situations for memorized speaking and for reading, we are concerned primarily with extemporaneous speaking. By extemporaneous speaking we mean talking from a previously prepared outline. The speaker studies his subject carefully, arranges his ideas, prepares all his material, and then, on the occasion of the speech, composes the language as he speaks. This ability to compose the language necessary to develop previously arranged ideas is the basic skill involved in extemporaneous speaking. Impromptu speaking differs from the extemporaneous method in the fact that both the ideas and the language must be assembled, ordered, and presented at the time of the speech. We may say here that the best way to develop impromptu ability is through practice in extemporaneous speaking.

These considerations are adduced here as an introduction to a few simple devices which may aid the extemporaneous speaker in recalling his ideas. By all odds, the important thing is a clearly constructed outline; for if the outline has been built with due regard for the principles of coordination, subordination, discreteness, and sequence, and if a consistent set of symbols has been used to designate the points in the outline, the speaker is not likely to encounter too much difficulty in recalling the ideas he plans to develop. It is sometimes helpful to think the speech through, or to speak it through, several times in terms of the outline. This gives some practice in composition and, what is probably more important, serves to fix the outline in one's mind. If speaker's notes are to be used, they should be placed on 3 by 5 cards or 4 by 6 cards in the form of a condensed outline of the speech. It is important that the speaker become thoroughly familiar with these notes before he attempts to use

them in the speech. On most occasions it is possible to dispense with speaker's notes by simply memorizing the outline. It is a helpful mnemonic device in memorizing the outline to form in the mind's eye a mental picture or image of the written instrument from which the speech is drawn.

On certain occasions it may be wise to memorize the opening sentence or two of the speech and the closing sentences. In general, however, memorization should be discouraged, because no one will be really happy or effective as a speaker until he learns how to develop his ideas extemporaneously.

Mental Hygiene Factors

Those who approach public speaking from the mental hygiene point of view are interested primarily in the mental health of the speaker, on the assumption that the well-adjusted individual will react favorably in the speech situation. Such a person may be described as one who is mentally objective and yet emotionally responsive—in short, one who is well balanced and integrated both individually and socially. Our purpose here shall be to describe certain attitudes toward public speaking which may profitably be studied and adopted by the speaker.

The "we" attitude

By the "we" attitude we mean that of working with the audience, sharing ideas and cooperating with them in a venture, presumably of mutual interest and benefit. This is contrasted with the pugnacious pose wherein the speaker seems to think that the audience is all against him and that he either has to beat them down or put something over on them. In the great majority of cases, people are willing to give a speaker a fair hearing and are, in fact, sympathetically disposed toward him. The speaker can do much to create such an atmosphere by assuming in his manner and mode of speech that he is trying to cooperate with the audience and share his ideas with them. What is probably most important

for our purpose here is that the assumption of such an attitude on the part of the speaker will aid him enormously in communicating his ideas freely and easily. If the speaker will always keep this image of the audience and his relations to it in mind, it will help him to break down inhibitions, to loosen up and to talk to the group as man to man, in a direct, frank, straightforward manner.

The "idea" attitude

While one is speaking, the focus of his attention should be on the ideas that he is trying to develop. The speech should move in the realm of ideas. The speaker who constantly gets himself confused and mixed with the ideas which he is developing is likely to impute qualities to these ideas which are wholly question begging and irrelevant. An idea is neither good, bad, nor indifferent merely because it is presented by a certain individual. Some speakers personalize almost every issue. They discount an idea because it happens not to be their idea; they glorify an idea because they thought of it; they take any reply as a personal affront. All of these reactions are unhealthy. They result in distorted images of the speech situation which make the task of the speaker infinitely more difficult. The ability to submerge oneself in an idea without becoming personally identified with it makes it easier to be objective and to meet the situation with greater equanimity, poise, and composure.

The "best-self" attitude

If it is necessary for you to think about yourself at all in the speech situation, try to keep this kind of image in mind: You have been successful in many situations; form a composite picture of yourself in these situations and then try to emulate your best self. A great deal of timidity and inadequacy springs from unjustified self-pity. As we have said in the section above, it is better in speaking to submerge oneself in the idea that he is discussing, but to the extent that the speaker's own personality enters into his attention,

it should enter affirmatively and positively and confidently. In other words, don't conjure up all of your failures, shortcomings, and weaknesses; such images are negative and their recall invites nervousness and the repetition of these failures. Be frank and objective about yourself, to be sure, but work with positive rather than negative images. Many people of real ability make public speaking difficult for themselves by cultivating a morbid self-consciousness. Confidence in your best self is one of the surest ways of guaranteeing your best effort.

The "all-in-a-day's-work" attitude

Many beginning speakers are inclined to make a crisis out of a speech situation. Did you ever stop to think about it in this way? You are only one of some 130,000,000 people in this country and your speech is only one of hundreds of millions of events in a single day. Whether you give a good speech, a bad speech, or no speech at all, the next day will dawn quite as usual. Speaking, like eating, is a perfectly normal human function and there is no reason why this activity should not be taken in one's stride. To get all worked up over a speech is to make a mountain out of a molehill and to lose one's perspective in a very unintelligent way. Prepare for the situation carefully, work hard at it, give the best you have, but don't permit yourself to make an emotional crisis out of an occasion which can be, and at its best is, easy, familiar, and pleasant.

These four attitudes, if thoroughly digested and assimilated, will help the average person to be much more objective and generally sane about public speech—the audience, the subject, himself as the speaker, and the occasion. If these constructions do not provide you with an adequate frame of reference, then work out others. Build up positive images and concepts around which you can rally your forces and get yourself orientated, integrated, and ready to do your best work. This isn't just a matter of kidding yourself along. Much depends upon the attitude which you have toward the

speech situation, and it is possible for you very largely to determine that attitude.

Semantic Factors

Significant speech is an effort to help others, or to get others to help you, control and manipulate the existential world in such a way as to make it a better place in which to live. The interesting thing about any speech situation is that the speaker must represent the factors in this real, existential world *symbolically*. An analogy which has been widely used to characterize the symbolic nature of speech is that of a map and the territory it represents. It is perfectly clear that a map of a territory is not the territory itself and that it may or may not be an accurate representation of this territory. If the map is incorrect or distorted in any way, it is not likely to be a very helpful guide in traversing the territory which it is supposed to represent. The same kind of difficulty arises when the speaker's symbols do not comport with the real, existential situation that he is trying to describe or fashion in one way or another. There are a number of factors which are likely to cause speech mapmakers to go wrong. We shall analyze here what appear to be the three most invidious and persistent of these factors.

Emotionally toned words

It is possible to distinguish between the scientifically symbolic and the evocative or affective functions of language. Even the casual student has probably recognized that most words have both denotative and connotative qualities. When, for example, the proposal to reorganize the federal executive departments was referred to by many writers and speakers as the "dictator bill," an attempt was being made not only to label the bill, but also to establish an emotional attitude toward the bill through the very label that was used. Such terms as "economic royalist," "red baiter," "constitution wrecker," and countless others illustrate this technique

in much of our language. We are not content to use a word to denote or to point to the object or concept which we have in mind, but seek at the same time, through the very language that we use, to build favorable or unfavorable attitudes toward the object or concept. Under many circumstances such language is an out-and-out distortion of the territory we are presumably trying to describe. In any event, it is utterly question begging to impute qualities, good or bad, to anything without undertaking to prove that these qualities actually exist. Is it not clear that this is precisely what one does when he uses labels as epithets or eulogies, under the guise of objective description? As a matter of fact, the real objection to the use of emotionally toned language is involved precisely in this matter of question begging. No one has any very serious objection to the use of vivid, colorful language in an honest, straightforward way; but it is another thing to use terms that are heavily freighted with emotional connotations, for the purpose of veiled and unproved arguments. The latter usage is simply a case of cheap sophistry and should have no place in the repertoire of the speaker whose interest is in honest argument and better understanding.

Consider as an example of the use of emotionally toned language the nation-wide debate on House Bill 1776, popularly referred to as the Lease-Lend Bill. Supporters of the Bill call their opponents "appeasers"; those opposed to the bill call the proponents of the legislation "war-mongers." The Bill itself is called the "Stop-Hitler Bill," the "Dictator Bill," or "Roosevelt's Personal War Bill." If a chemist were to use labels as loosely, he would be in real danger of blowing up his laboratory. If a speech is to be helpful in enabling an audience to reach an intelligent decision, then the language used must provide at least a reasonably accurate symbolization of the factors concerned. The exploitation of prejudices and intolerance through emotionally colored language degrades and cheapens speech. We must be on our guard against it both as speakers and as listeners.

The "either-or" approach

One of the most common causes of distortion through language is the inclination of speakers to draw hard and fast lines of distinction or demarcation where such lines are not justified by the facts. It is like showing a line fence on a map where no such fence exists. In a discussion, for example, I may refer to a man as a conservative, and someone else may call him a radical. By this mere process of labeling we may appear to be completely and diametrically opposed on the classification of this particular individual. The fact of the case is that there is a continuous variation between radical and conservative; in other words, there are many degrees of liberality and many shades of conservatism. When one man says that another is conservative and is countered with the objection that the person is liberal, it may happen that the two people are really quite close together in their views. Because of this tendency to categorize, that is, to accept words as pigeonholes into which we may insert any given referent, we get ourselves into the difficulty of building up verbal barriers and difficulties where no real barrier exists. This is not just an occasional language difficulty. It permeates our entire language usage and is as productive of misunderstanding and intolerance as any other single factor. For the public speaker, it means that he must be very cautious about the use of categorical distinctions, and that he must be willing to analyze differences of opinion on the assumption that these may be more verbal than real.

Intentional orientation

Many people have an undue regard for words and tend to orientate themselves to verbal constructions rather than to real things. The result is that they live in a make-believe world which may have little or no significant relation to the actual world. This difficulty arises most frequently from a failure to realize that the connotations and denotations of any word are derived by generalizations from an enormous number of individual cases. Take the word "Turk," for

example. Most of us for whom this word "Turk" has any meaning at all have built up certain conventionalized meanings and attitudes which we call out whenever we meet this term. The fact of the matter is that this generalized meaning may not fit at all well the particular case in question. Each Turk, after all, is an individual, and Turk One may differ very materially from Turk Two or Turk Three or Turk Four, and so on. The danger is that we will abstract certain generalized conceptions and then impute these meanings willy-nilly to all individuals and cases to which the term in question is applied. This, of course, means that we are likely to commit grave injustices quite inadvertently by making the naïve assumption that all individuals which are described by a single label are actually alike. Brought out thus in the open, of course, no intelligent person would subscribe to this position, and yet this very fallacy operates time and again in the language usage of most people. This, then, is what we mean by an intentional orientation. The remedy lies in an existential orientation in which every effort is made to see the actual individual referent behind the label that is used. For the speaker, this amounts to a practical injunction to be careful of hasty generalizations, to qualify his language as individual cases may dictate, and, so far as possible, to deal in specific cases and things.

These few pages on public speaking have been written on the assumption that the important business of the speaker is to have something to say that may be effective in shaping events in desirable directions by influencing the behavior of others. They are based on the assumption that the speaker has a thorough knowledge of his subject, that he is honest and sincere in the cause for which he is speaking, and that he has a genuine respect for the integrity of his audience. If these assumptions lay us open to the accusation of mixing rhetoric and ethics, we are quite willing to let anyone make the most of it. We are not interested in glib talk, and we resent those who betray their own intelligence for the purpose of exploiting others. This is not a pious preachment,

but a philosophy of rhetoric that has stood the test of time and is worthy of the best effort of every college student.

Questions and Exercises

Up to this point, the student has participated in several group discussions and one or more public discussions. The public discussions have provided some experience in public speaking. The exercises below are organized in terms of specific skills involved in public speech, and in each case they should be pointed in the direction of the factor under consideration.

1. *Bodily action speech.* Present a five-minute extemporaneous speech, either expository or argumentative in character, on a subject of your own choice. Be absolutely certain that you plan a speech which demands considerable bodily action—a speech which will be a better speech because of considerable bodily action. If you wish, you may bring with you some article to explain or demonstrate during the speech.

2. *Vocal variety speech.* Variety in force, pitch, time, and quality should be the aim and focus of this assignment. Preferably the general end of this speech should be *to impress,* that is, to make the audience feel deeply about the subject. A eulogy of some important man would effectively serve the purpose of the assignment. If recording apparatus is available, this would be an excellent speech to record. In any event, criticize these speeches from the standpoint of significant vocal variety—from the standpoint of flexibility and range in voice. Is there significant variety in pitch? Time? Quality? Force? What do these factors mean? How can they aid the public speaker?

3. *Reading a speech.* Select some passage of oratorical prose which requires considerable vocal variety for adequate interpretation. Introduce this passage with a one-minute explanatory statement which will enable your audience to follow the reading. Then read the passage from the printed page with special attention to the meaningful use of voice.

4. *Speech outlines.* Speech outlines should be submitted for every speech delivered in class. For this assignment, let half of the class prepare outlines for expository speeches (to explain) and the other half prepare argumentative speeches (to convince). If at all possible, have the outlines typewritten. Spend one class period studying and criticizing these outlines. Exchange outlines in class. Raise questions about the introduction, body, and con-

clusion; about the central ideas; about the support of these ideas, the subpoints; and about the use of symbols.

Have these speeches delivered in class with special attention to organization. Does the organization of the speaker's ideas emerge clearly and easily? Do the mechanics of organization protrude unnecessarily?

5. *Speech composition.* Submit for criticism the outline and manuscript of a five-minute persuasive speech. Work for real distinction in style. Make it your best effort. Read some of these speeches in class. Note the modes of persuasion used. Criticize the organization and style of the speech. Be certain that these are speeches rather than essays!

6. *Analysis of speeches.* Divide the class into groups of from five to seven persons. Assign a speech to each group for study and analysis. These may be taken from collections of great speeches or from any other available source, so long as they are speeches worthy of careful study. Ask each member of each group to do the following: (1) Outline the speech; (2) prepare a précis of the speech; and (3) write a 200-word criticism of the organization and style of the speech. Use these papers as a basis for a critical discussion of the speech in class.

CHAPTER 15

Debate

Debate, like discussion, may take place in face-to-face groups or in co-acting groups. Again, like discussion, it may be employed in learning or policy-determining groups. Likewise, it may proceed either through conversation or public speeches. What, then, is the difference between discussion and debate? The essential difference is this: Debate is competitive advocacy; discussion is cooperative inquiry. Debate may be defined as competitive discourse among two or more advocates who are committed to logically incompatible positions on a specific proposition. In many important programs in life, the discussion phase precedes and prepares for debate.

In this chapter we shall first consider the rationale of debate for the purpose of providing an adequate orientation to an important and often badly misunderstood activity; secondly, we shall consider some of the more essential methods; and, thirdly, we shall analyze the types of debate.

The Rationale of Debate

Debate as the deliberation of propositions

A proposition is a judgment expressed in language in the form of a declarative sentence. Some such statement should always serve as the basis of debate. In practical speaking situations it may appear as a motion, resolution, bill, or simply as a frank statement of opinion. In any case, it represents a formulated and crystallized attitude toward some problem. As such, it may be the debater's opinion or judgment, growing out of his own reflection on the problem, or it may be a position which someone else has asked him to represent. This latter case is illustrated by the lawyer who

defends such propositions as may be brought to him by his clients. The function of the debater, then, is to defend or argue in behalf of a definite proposition, against some other advocate who opposes this proposition.

It is helpful to distinguish three types of propositions—those of *fact, value,* and *policy.* A proposition of fact expresses a simple factual judgment. It raises the question: Is this true? Thus, in an action of law, the State may charge that John Doe is guilty of first degree murder; the defense may deny that he committed the alleged act, or deny that the act is first degree murder. In either case, a question of fact is involved. Other examples follow:

England is unable to pay cash for further armaments purchased in the United States.

Express trains on the Chicago Elevated Lines stop at every station in the Loop.

The net income of the American farmer has decreased in the last two decades.

Invasion of continental United States by an armed force is a practical impossibility.

A proposition of value expresses a simple evaluative judgment. It assesses the goodness or badness, desirability or undesirability of some person, institution, or conception, without making any direct recommendation as to policy or action. The following are examples:

The sit-down strike is a justifiable weapon for organized labor.

President Roosevelt's appointment of Frank Knox as Secretary of the Navy was a wise appointment.

Installment buying is detrimental to the American people.

The extension of consumers' cooperatives is desirable.

A proposition of policy goes beyond those of fact and value in that it recommends some specific course of action or policy. As a subject for debate, it raises the question: Should this be done? Here are some examples:

Congress should pass House Bill ——.

The President of the United States should be elected for a single six-year term.

Intercollegiate football should be abolished.

The State of Michigan should adopt a state income tax.

We have here classified propositions for debate on the same basis on which we classified problems for discussion in an earlier chapter. While discussion centers around problems phrased as questions, debate takes place on judgments phrased as propositions. Here again we should observe that matters of policy and value are generally more amenable to discussion and debate than are questions of fact.

Debate as intentional deliberation or advocacy

The function of a debater is to present the best possible case for the proposition. By the best possible case, we mean the best defense which can be offered in terms of the facts of the case, and in keeping with common honesty and decency. His task is that of proving his proposition, or, at least, that of raising a presumption in favor of his position by presenting argument and evidence which establish its probable truth.

The debater's reasoning is intentional in the very fact that it is adduced to prove a proposition and to establish conviction. He is committed to his proposition either by his own convictions and desires or by the nature of the circumstances. On the one hand, his effort is governed by the logical responsibility of proving the proposition; on the other, by the psychological responsibility of convincing those in whose opinion he is interested. Debate, then, is not *inquiry* in the sense that discussion is, but is *advocacy* of a specified and relatively fixed proposition.

It has often been said of debate, as if to discredit its efficacy, that a debater seldom, if ever, can convince his opponent. He may down his opponent in an argument, but this opponent remains unconvinced and unpersuaded. This is

obviously sometimes true and sometimes not. Even if it were always true it would not be a very discerning criticism. Under normal circumstances a debater is attempting to convince some third party rather than his opponent. This third party may be an audience, or it may be a judge; but it is some man or group of men whose judgment on the matter is significant to him. The very fact that the debaters have found themselves unable to agree is usually the precise reason why the debate takes place. Ideally, at least, people will first make every effort to come to some kind of agreement on a problem through reflective deliberation or discussion. Failing in this, they will then resort to debate, wherein the decision is submitted to a popular vote or to some supposedly neutral third party. In a debate, both parties frankly and openly *desire* to maintain their proposition, and the debate is over as soon as one party concedes the position of his opponent. Convincing one's opponent may be the purpose of a debater, but in the great majority of cases, this is only incidental to winning the support of others.

Debate as competitive deliberation

Debate, by its very nature, is a competitive activity. Such competition need not at all imply belligerency or personal combat. At its best it is a competition among ideas rather than persons. Where two people, or a group of people, find that they cannot agree on some problem which must be decided one way or another, about the only thing they can do is to debate. The matter is then submitted to a vote of the group or to the decision of some neutral third party. In debate, the position of one man is placed in competition with another, and a decision is made on the basis of argument and evidence. Other things being equal, it may be assumed that the sounder position will prevail. About the only alternative to debate in a situation where people cannot agree and yet must reach some decision, is the resort to force. We think that most people would prefer the debate.

Debate as a means of resolving conflict

Conflict and difference are inevitable in any free society. It is altogether too much to expect that people will always see eye to eye on questions of value and matters of group policy. It is probably just as well that they do not. Life would be rather drab and dull if everyone agreed on everything. What is more, it is doubtful that very much progress would be made, because progress and growth are very largely a function of conflict and difference. How people are going to resolve these conflicts is, of course, the important question. On this point we wish to be perfectly clear. Wherever possible we should prefer that differences be resolved on the basis of cooperative, integrative behavior. The principles and methods of discussion are designed to implement such behavior. Granting all this, however, we must be blind indeed if we do not see that, in many situations, cooperative discussion will not yield a working agreement. We must face the simple fact that, on many questions of practical policy in which human interests, desires, goals, values, motives, and pocketbooks are involved, people are unable to reach conclusions which can be used as the basis for governing group behavior. Unless anarchy is to prevail they must adopt other methods of settling their differences. The method to which civilized human beings have resorted for centuries is that of debate.

In general, there are about four ways of attempting to resolve any conflict. The first of these is *integration*, wherein an attempt is made through discussion and conference to reach an agreement which conserves the essential values of all parties involved in the conflict. The method, as we have seen, is cooperative inquiry in which people participate frankly and honestly and with due respect for the integrity of the other people involved. A second method is *bargaining*, or debate wherein each party is committed to a specific position and an attempt is made to reach a decision through the intervention of some third party. The result may be a com-

promise, as in arbitration; or it may be a judicial decree, as in adjudication. Agencies for collective bargaining, arbitration tribunals of all kinds, and our regularly established courts are examples of debate as a method of reaching solutions to problems on which people have been unable to reach an agreement by other means. Most legislative assemblies are also examples of this process. There, proposals affecting public policy are debated and decided by a majority vote of the assembly.

A third method of resolving conflict we shall call *exploitation.* As such, it must be distinguished carefully from integration and bargaining. Exploitation usually takes place in a situation where the parties to the conflict are about equal in power, but where one party has the advantage of position, prestige, superior intelligence, or has more ready access to the facts. He is unable to force his opinion upon the other members of the group, so he resorts to trickery, dishonesty, and deception in order to bring them around to his point of view. There are many methods of doing this, some of which are relevant to speech and some of which are not. Often the word *propaganda* is used to describe speech in its exploitative aspects. To the extent that propaganda is identified with tricks for influencing behavior—tricks which are basically dishonest—this usage of the term is justified. Censorship, misinterpretation, distortion, and the use of stratagems to dupe the listener are exploitative. Any device which attempts to circumvent a fair interpretation of the facts is open to this charge and should be viewed with suspicion. Other persons define propaganda very broadly to include all types of advocacy, regardless of the method employed. Here we are not so much interested in what should be the meaning of this concept as we are in preserving a distinction between advocacy which proceeds through reasoned discourse, and that which resorts to subterfuge and deception. Debate becomes an agency of exploitation only through intentional perversion and malpractice.

The fourth method of resolving conflict is *force.* It is usually applied in situations where the parties to the conflict are unequal in power and one is able, therefore, to inflict his position upon the other through force or the threat of force.

This analysis enables us to say a number of things about the place of debate in school and society. The principal objection to school debating has come from those who frown on its competitive nature. Many have made clear their preference for discussion. We can concur in this preference only if the aims and purposes are specified. The point is this: No matter how much we may wish to deal with social conflict on the basis of reflective, integrative behavior, there are countless situations in which these methods do not yield an acceptable basis for action. If exploitation and force are to be avoided in many such cases, we must have available an orderly method of handling these differences. Debate is such a method. It is a far cry from force, and, properly employed, it need not mean exploitation. It may be brought into play when discussion and conference fail. Take an action at law as an example. While improved machinery for settling differences out of court may be devised, such machinery can hardly be expected to displace the courts. Where personal interests are inextricably bound up with a conflict, it is often impossible to reach an agreement without resorting to legal debate and judicial decree. The same is true of many of the problems facing citizens in political campaigns and legislative assemblies. Here again the problems which must be decided are often so identified with special interests that it is impossible to get agreement. The only peaceful recourse is debate and acceptance of the decision of the majority.

If this analysis be correct (and in any realistic view it seems inescapable), then it is important that we understand the method of debate and that we develop skill in its application. It is not a question of discussion *or* debate; these activities are complementary and supplementary in most practical situations.

Methods in Debate

Phrasing the proposition

We have said that all debate takes place on propositions. The phraseology of the proposition is a matter of considerable importance, because it sets out the precise point at issue. A resolution, bill, or motion which is badly phrased will almost always result in an enormous amount of confusion in the debate. A few simple rules will be of assistance here.

In the first place, the proposition should state the specific position of the affirmative. That is to say, the maker of a motion, bill, or resolution should state precisely what he is proposing. Failure to do this places the negative in the anomalous position of not knowing what it is opposing, if indeed, it has any basis for knowing whether it cares to oppose at all. For example, in a series of school debates on the proposition that the powers of the Federal government should be increased, we heard affirmative teams support more than twenty-five different proposals designed to increase these powers. They included control of child labor, economic planning, minimum wage legislation, federal aid to education, control of radio broadcasting, a national police force, abolition of interstate trade barriers, reinstatement of the Eighteenth Amendment, and many others. The negative was expected to oppose any one or all of these, or any other "increase in power" which the affirmative might advocate. While this is an extreme example, it does illustrate the difficulties which arise when the proposition fails to state the specific position of the affirmative.

In the second place, the proposition should be free of ambiguous and question-begging terms. An ambiguous term is one that may be legitimately interpreted to mean more than one thing, while a question-begging term is one which slants the proposition either in favor of the affirmative or the negative. The difficulty which such terms are likely to create is obvious. Consider the proposition: *The deplorable conditions existing under the share-cropper system should be*

improved. The term "deplorable" is question begging because it makes a gratuitous and unproved assumption; whether or not the conditions are deplorable is part of the debate. The term "improved" is ambiguous in this context because it can be interpreted to mean many different things. Another example of ambiguity may be seen in the proposal: *The State should abolish child labor.* Does the term *State* mean the State of New York, that is, the State in which the proposition is being debated? Or does it mean the *State* in the sense of a sovereign power, action by government? In the latter case, it might be proposed that the Federal government should take this action.

A third requirement of considerable importance is that the proposition be phrased in such a way as to place the burden of proof on the affirmative. The burden of proof is the risk of the proposition; it devolves upon the advocate who proposes a change from the status quo. Or, putting it differently, it rests upon the individual who will be dissatisfied if nothing is done about the matter under consideration. This requirement is met if the proposition is stated in such a way that the person who affirms the proposition *is* the person who has the risk of the proposition and who will be dissatisfied if nothing is done. In propositions improperly worded with respect to this matter of the burden of proof, it is inevitable that there will be confusion as to the affirmative and negative and their responsibilities. In a school debate, for example, it is customary for the affirmative to open and close the debate. If the proposition is phrased in such a way as to place the burden of proof on the negative, the team opening the debate will find itself in the anomalous position of having to speak against a motion which has not yet been made, and the negative (in this case, the actual affirmative) will be denied its rightful privilege of closing the debate. In any debate, no matter how informal, the logical responsibilities, and hence the rights and privileges of the speakers, are affected by the burden of proof.

The allocation of the burden of proof may be illustrated

by considering various wordings of the proposal that action be taken in the matter of capital punishment. In Michigan, a state which does not employ the death penalty, we can debate the proposition that capital punishment be legalized as a punishment for first-degree murder. In Illinois, a state which now uses capital punishment, we can propose that it be abolished. In both cases, the burden of proof is properly allocated because the party which says "yes" to the proposition is the party which has the risk of the proposition. The proposition that capital punishment should be retained in Illinois, however, is incorrectly worded. Here the nominal affirmative (the side which says "yes" to the proposition) is the actual negative, and the actual affirmative (the side with the burden of proof) is the nominal negative. In other words, in a properly phrased proposition, the nominal affirmative and the actual affirmative must coincide.

Preparing for debate

Debate, like discussion, demands careful preparation. As a matter of fact, discussion is in itself one of the best kinds of preparation for debate. As we have pointed out before, discussion normally precedes debate, and the proposition for debate may develop out of the discussion. In this way, the investigation which has prepared for the discussion, together with the additional information which has developed in the discussion, may be brought to bear on the debate.

In considering a proposition of policy, the debate will center around the status quo, the proposal of the affirmative, and any counter-proposal which may be introduced by the negative. Since this is the case, it is helpful to prepare for the debate with these factors in mind. The following questions may be used as study guides:

1. Are there existing evils?
2. Are these evils caused by those factors which the proposition proposes to modify?
3. Are these evils inherent in the present system?

4. Will the plan proposed by the proposition help to reduce these evils in some material way?
5. Will the proposed plan bring benefits other than the reduction of existing evils?
6. Will the proposed plan give rise to new and greater evils?
7. Are there other plans which would meet the present needs better than the plan proposed in the proposition?
8. Do these plans differ more or less from the status quo than the proposed plan?
9. Are these plans counter to the proposed plan?
10. Would such alternative plans give rise to new and greater evils to such an extent as to render them impractical?

Analyzing the proposition

Analysis, as we are here interested in it, consists in examining the proposition for the purpose of determining the issues. The issues may be defined as the inherently vital points, elements, or subpropositions, affirmed by the affirmative and denied by the negative, upon the establishment of which depends the establishment of the main proposition. They are the points which the affirmative must maintain in order to sustain the proposition. The negative, in turn, to disprove the proposition, must break down, destroy, or disprove at least one of the issues. Thus, it may be said that the issues are the factors around which a good debate *should* center. The points of clash in a debate, then, may or may not be the real issues, depending upon the intention and the acuity of the debaters.

The issues are *vital* in the sense that the "life" of the proposition depends upon them. The destruction of any one issue, like the destruction of any vital organ in the body, is sufficient to destroy the proposition. The issues are *inherent* in the sense that they are not created or trumped up by the debaters, but are implicit in the proposition and are there to be discovered by anyone who analyzes the proposition carefully. If there is agreement on the interpretation of the proposition, then there should be agreement or substantial agreement on what the issues are.

The issues may be determined by a formal analysis of the language of the proposition whereby it is determined what subpropositions must be proved in order to prove the proposition. Ordinarily, however, a thorough investigation of the proposition, united with a close scrutiny of its verbal structure, will yield a more mature and more refined analysis.

Proving the proposition

Once the proposition has been carefully worded and analyzed, it is the function of the debater to present proof in support of whatever position he is taking with respect to the proposition and his interpretation of it. This proof will be in the nature of a reasoned discourse. Arguments will be presented in support of the proposition, and these arguments, in turn, will be supported by other arguments and evidence. The two elements of proof, in fact, are *argument* and *evidence*. Argument consists in the lines of reasoning which are offered in defense of a proposition, while evidence includes matters of fact or the testimony of competent persons which are used to support these lines of reasoning.

It will not be possible for us to go into an analysis of the different kinds of argument and their logical requirements, or the different kinds of evidence and the tests which may be applied to evidence. Some attention has been given to these matters in Chapter 14. Suffice it to say here that the function of the debater is to present a case for the proposition which is logically sufficient to sustain the proposition. If on the affirmative, such a case should present evidence and argument designed to support each issue. If on the negative, the case must be sufficient to destroy one or more issues. The typical structure of such argument and evidence is that of the logical outline described in Chapter 14.

At the outset of any debate, the affirmative faces the responsibility of presenting a *prima facie* case in defense of the proposition which it submits. There is a presumption in favor of the negative until this responsibility has been discharged. As we have seen, this responsibility exists for the

affirmative by virtue of its having the burden of proof on the proposition. When the affirmative has presented such a case, there devolves upon the negative a responsibility to reply. In other words, the affirmative's *prima facie* case raises a presumption against the negative. Faced with this responsibility, the negative must make a rejoinder. If this rejoinder is sufficient to break down the affirmative case on one or more issues, then, as might be expected, the presumption is again in favor of the negative and the affirmative must make a rebuttal. To this rebuttal the negative may reply with a counter rebuttal, and the affirmative with further rebuttal. The extension of this reply and counterreply depends upon the time and energy of the debaters or upon the rules and regulations which have been agreed upon to govern the debate.

It is helpful to point out that in debating a proposition of policy the negative rejoinder to the affirmative is generally one of four kinds. One position for the negative is a *defense of the status quo.* Here it is argued that there is no need for a change, and an attempt is made to defend the existing order against any attack which the affirmative may bring. A second type of negative case is one which argues *repairs.* In this instance the negative admits that there is some justice in the attack which the affirmative has made on the status quo, but argues that these defects are not inherent and that they can be corrected without resorting to the affirmative proposal. The gist of the argument is that we should patch up the old rather than adopt the new. A third type of case available to the negative is that of arguing a *counterproposal.* Here the negative uses some alternative proposal for the purpose of defeating the proposition of the affirmative. The counterproposition must be vitally inconsistent with the affirmative proposal; it must be logically impossible for a rational person to believe in both of them. The negative, in effect, argues that the proposal of the affirmative should not be endorsed because there is a better way of coping with the problem. Fourthly, the negative may

employ *straight refutation.* In this case it contents itself with tearing down arguments advanced by the affirmative. Since the affirmative must establish a *prima facie* case in order to sustain its proposition, the negative can block the affirmative proposal by tearing down its vital arguments, even though no negative constructive case *per se* is presented.

Refutation

"An argument may be refuted either by a counter-syllogism or by bringing an objection."[1] By counter-syllogism is meant a line of argument leading to a conclusion logically inconsistent with the conclusion to which exception is taken. In other words, one way of refuting an argument is to present another argument which supports a conclusion that cannot stand with that of the argument it is offered to refute. Such refutation is effective, of course, in the degree that the counterargument is more logical or more convincing than the original argument. A person offering the refutation says in substance, "You have argued thus and so, but there is another way of looking at this same matter. Consider this argument with me."

Refutation by bringing an objection to an opponent's argument consists in an attempt to break down his argument. The objection may, for the purpose of pointing out fallacies, be aimed at the reasoning which an opponent has used, or it may be aimed at the evidence which has been given to support the reasoning. The process involves an application of the tests of sound reasoning and evidence, for the purpose of pointing out mistakes or inadequacies which vitiate, either wholly, or in part, the conclusion drawn from the argument.

Before attempting to refute any argument in a debate, however, it is important to consider whether or not the argument in question is relevant to the matter at issue, and whether or not it is essential in terms of the case that is being presented. Unfortunate as it may be, it is not an

[1] Aristotle's *Rhetoric,* II, 25.

uncommon experience to meet many irrelevant arguments in a debate. To dignify these matters by refutation, then, is only to emphasize them and to give them a status in the debate which they do not deserve. Obviously, the thing to do is to point out their irrelevance and dismiss them without further consideration. Essentially the same procedure should be followed when an argument is not vital to the debate in view of the position that is being argued. The affirmative, for example, might spend considerable time in developing certain issues which the negative does not choose to contest. The affirmative's argument in this case is not irrelevant to the proposition under consideration, but there is no reason why the negative needs to refute the argument. The obvious thing for the negative to do is to admit the argument, or explain why no answer needs to be made, and proceed at once to the matters which are really in issue.

It is usually wise for the debater to give some attention to refutation in preparing for the debate. After all, the ability to defend a position, once it is taken, and the ability to attack an opponent's argument is as much a part of the debate as the construction of one's own case. A good debater will, therefore, consider in advance the possible lines of argument which an opponent may use against him, and also the rebuttal approaches which may be made to constructive positions likely to be taken by the other side. Needless to say, such prepared refutation should be used in the debate only as it has direct application, and even then it should be adapted carefully to the specific situation it is designed to meet in the debate. In introducing refutation, care should be taken to indicate the precise argument of the opponent that is being considered; and, under most circumstances, it is wise briefly to indicate the significance of the issue in relation to the debate as a whole.

Approaches and attitudes in debate

Some ingenious writers on this subject have devised various strategies which may be employed in a debate. As a

matter of fact, some of them have gone so far as to couch these strategies in military terms, such as skirmishing, head-on-attack, and so forth. We are decidedly skeptical about analyses of this kind, because they are likely to make out of debate an attempt to exploit the audience at the expense of one's opponent and at the expense of a reasonable decision on the proposition. A somewhat more crass objection to the use of such strategies is the fact that they can almost always be exposed with very little difficulty by a seasoned debater. About the only kind of strategy that cannot be exposed to the discomfiture of the person who is trying to use it is that of sound, vigorous argument; and, of course, this is hardly strategy in the sense that the term is usually used.

The best approach in almost any argument, both from the logical and psychological point of view, is that of a sound analysis supported by as few carefully chosen lines of argument as will constitute *prima facie* support for this analysis, with each of these lines of argument thoroughly bolstered with the best evidence available. A case built along these lines has the merit of being simple, clear, easy to grasp, and, at the same time, completely fortified from every point of view. Cases which are scattered, and complex, are seldom so effective as those which are organized around a few simply stated and well-supported arguments. If this be strategy, then we can see nothing in it that will not redound to the benefit of intelligent deliberation.

Desirable personal attitudes in debaters can probably best be described by the term *magnanimity* or *fair play*. Good debaters are not little pettifoggers "skilled in delays, sophisms, and misapprehensions." Rather, they are men whose interest in the issue under consideration is unmistakable and who are capable of rising above personal embroilments and petty trickery, meanness, and vindictiveness. The attitude that we are describing here is not stuffy self-righteousness, but the kind of earnestness, tempered with generosity and frankness, which makes pettiness suffer by comparison.

Edmund Burke once said that magnanimity in politics is "not seldom the truest wisdom." If he is right in this opinion, we may take it that the attitude which we are recommending not only makes for more intelligent deliberation, but is good persuasion as well.

Types of Debate

Educational debate

We shall use the term educational debate to describe the various types of debate which may be presented to an audience for the purpose of informing them and enlightening them on public questions. The types of debate which we describe in this section may also be used by teachers and students of speech for the purpose of developing proficiency in debate and in extempore public speaking. It should be emphasized, however, that debate does not find its most important outlet in this area. As we have said several times before, debate is primarily and essentially a policy-determining technique, rather than a learning technique. By all odds, its most important application is in legislative, forensic, and political deliberation, where its chief function is to aid in the determination of policy and equity. The chief purpose of school debating should be to develop attitudes toward debate and skill in debate which will enable people to participate more competently in the important debates of life.

Traditional debate. The traditional debate ordinarily takes place between two two- or three-speaker teams, one representing the affirmative and the other representing the negative on an agreed proposition. We call it traditional because it is the form which has been most frequently used in American schools and colleges. A typical arrangement of speeches is as follows:

Constructive Speeches

First affirmative.....10 minutes
First negative.....10 minutes
Second affirmative.....10 minutes
Second negative.....10 minutes

Rebuttal Speeches

First negative.....5 minutes
First affirmative.....5 minutes
Second negative.....5 minutes
Second affirmative.....5 minutes

The important thing to notice is that the affirmative opens the constructive speeches, and the negative opens the rebuttal speeches. It is a function of the first affirmative speaker to state the proposition for debate, to give the affirmative's interpretation of the proposition, and to open the argument for the affirmative. The first negative speaker should begin by responding to the interpretation of the question which the affirmative has submitted. He may accept this interpretation or reject it in whole or in part. In the latter case, of course, it is incumbent upon him to explain his objection with considerable care because the affirmative has the right to interpret its own motion or resolution *as it sees fit*, so long as this interpretation places a legitimate construction upon the language of the proposition. Having dealt with the interpretation of the question, the first negative speaker may then, if he chooses, reply to one or more of the arguments advanced by the first affirmative. From here, he will normally go on to construct the first point in the negative case. The second speakers on both the affirmative and negative will offer such refutation as is necessary at the time, and go on to complete the constructive argument, concluding with a brief summary of their position. The rebuttal speeches on each side will attempt to attack opposing arguments, to defend constructive arguments, and to center the debate around the contested issues.

Two-speaker debate. The two-speaker debate is a simple variation of the traditional debate, in which the affirmative and negative are each represented by one speaker. The affirmative opens the debate with a ten-minute constructive speech; the negative replies with a fourteen-minute rejoinder; and the affirmative closes the debate with a four-minute rebuttal. We mention this arrangement of speeches here

because we have found it well adapted to class debates. It obviates the necessity of teamwork, which may be difficult under some circumstances, and provides for a relatively short debate. The chief variation in method lies in the negative rejoinder, where the speaker must present his constructive case and, at the same time, reply to the affirmative argument.

One-rebuttal debate. Another simple variation of the traditional debate is that in which there is only one rebuttal speech, as such, and that is given by the affirmative. The schedule of speeches may be arranged as follows:

Constructive Speeches

First affirmative..... 5 minutes
First negative.....10 minutes
Second affirmative.....10 minutes
Second negative.....10 minutes

Rebuttal Speech

First affirmative..... 5 minutes

This schedule has the advantage of reducing the length of the debate and still providing for participation by four persons. It has been argued, too, that it has the advantage of encouraging adaptation and rebuttal throughout the debate, since, for the negative, at least, this is its only opportunity to present refutation.

Cross-question debate. The cross-question debate is a more radical departure from conventional debating in which an opportunity is provided for question-and-answer periods as an integral part of the debate. In these periods questions are directed to the opposing team, and immediate answers are given. The method has the advantage of enlivening the debate and tends also to prevent irrelevant or specious argument. When a man knows that he is going to be questioned pointedly on his argument, in a situation where he must give an immediate reply, there is a definite incentive to construct his argument with considerable care. The method also enables the speakers to bring out the issues somewhat more

clearly and to focus attention on these issues. The following schedule of speeches is typical:

The first affirmative presents the entire affirmative case	20 minutes
The first negative questions the first affirmative	10 minutes
The second negative presents the entire negative case	20 minutes
The second affirmative questions the second negative	10 minutes
The first negative presents the negative rebuttal	10 minutes
The second affirmative presents the affirmative rebuttal	10 minutes

This schedule may easily be varied with respect to the length of the speeches and, also, in such a way as to allow additional question-and-answer periods.

Since the chief deviation is in the question-and-answer period, we shall offer some suggestions for conducting this period. In the first place it must be understood that the period is in charge of the person who is asking the questions Within the limits of reasonable decorum, he may handle this period as he sees fit, asking as many questions as he chooses to ask, and interrupting the answerer if he misinterprets the question or consumes too much time with his answer. Under ordinary circumstances the questions will be directed at the opposing case—at the analysis upon which this case is built, at the arguments, and at the evidence. The purpose is to reveal weaknesses in an opponent's argument, to bring out additional evidence which may have been neglected, and otherwise to lay the basis for projecting one's own case.

This kind of debate, probably more than any other, demands for its success an attitude of fair play and an honest attempt to get at the real issues of the proposition. Unless handled in this way, the question-and-answer period can easily degenerate into bickering and quibbling which is largely futile so far as understanding the question is con-

cerned. Broadly and liberally interpreted, however, the cross-question debate can provide an excellent discussion of a public problem.

Problem-solving debate. The problem-solving debate provides for three sets of speeches (analysis, solution, and evaluation) by two teams of three speakers each. The problem for debate is phrased as a question rather than a proposition, and the deliberation which the schedule of speeches provides is as much discussion as it is debate. At least, all of the speakers attempt to solve the problem, and they are free to agree or disagree with any other speaker in the debate, including their own colleagues.

The function of the first speaker on each side is to analyze the problem. He will attempt to interpret the question and to set out what he conceives to be the disturbing factors in the situation, together with the causes of these difficulties. So far as possible, he will also develop adequate criteria by which solutions to the problem may be judged. The second speaker on each team will present the solution to the problem which he and his colleagues believe to be the most adequate in terms of the problem as analyzed. His duty is to explain this solution and to defend it in relation to other possible solutions. The function of the third speaker in each case is to compare and evaluate the two proposals which have been developed in the debate. In this capacity the speaker is under no particular obligation to defend or attack either of these proposals. His function, rather, is to interpret them, compare them, and evaluate them in relation to the evidence and argument developed in the debate, and in relation to any additional information which he can bring to bear on the subject.

From this description of the problem-solving debate, it can be seen that unless some precaution is taken to organize teams whose convictions on the problem are identified with different proposals, there may be little or no clash in the debate. The plan is devised to provide a debate in which a maximum of freedom is allowed the teams and the indi-

viduals to argue their own convictions. The emphasis is thus placed on a reflective approach to the problem and on an attempt to solve this problem, rather than to win support for a specified proposition.[2]

Student congress or legislative assembly. Like the problem-solving debate, the student congress begins its work with a problem rather than a proposition. The preliminary investigation consists in a careful study of this problem, through reading and discussion. The purpose of this preliminary investigation is to analyze the problem and to consider possible solutions to the problem, to the end of drawing up a bill or resolution which represents the recommendation of the investigator or investigators. In planning for a student congress, it is contemplated that several groups will conduct this kind of preliminary investigation independently, so that each will come to the congress prepared to submit a carefully worded bill or resolution expressing its attitude toward the problem. On an intercollegiate basis, for example, this preliminary study is undertaken by the individual schools participating, and then each school sends a delegation to the student congress.

The congress itself usually involves a series of meetings which occupy the participants for two or three days. The first general meeting provides for the election of a speaker of the house, the appointment of a parliamentarian, and the announcement of committee assignments. The entire group then breaks up into committees as assigned. Here the bills which have been brought in by the different delegates are submitted to committee analysis and discussion. It is the function of each committee to work over these proposals and to report out a bill which may be submitted to the congress or legislative assembly. Any minority which develops in the committee may prepare a minority report if it wishes to do so. When the committees have completed their work, the

[2] See Frederick W. Orr and Albert L. Franzke, "The University of Washington Plan of Problem-Solving Debate," *Bulletin of the University of Washington* (Extension Series), No. 8, January, 1938.

assembly is again convened for the purpose of taking action on the committee proposals. These proposals are submitted from the floor, and debate is conducted on them under the usual rules of parliamentary procedure. The work of the assembly is completed when action is taken on the problem, and then the meeting is officially adjourned.

In some legislative assemblies of this sort, it is customary to deal with several problems which are assigned in advance. Each participating school or group then studies several problems, rather than one, and comes to the congress with delegates prepared to participate in committee work on these problems. Another variation is possible in the student congress by providing two houses rather than one. In other words, the bicameral system rather than the unicameral system is employed. It will not be possible for us to go into the various rules and regulations which have been adopted to govern these assemblies. Suffice it to say that it is very important that all plans be carefully laid and that each participating group be provided with a copy of the rules of the assembly and a schedule of events.

The student congress and legislative assembly provides stimulating opportunities for students to participate in both discussion and debate. Discussion enters into the preliminary investigation of the problem and into the committee work. The committees are advised to begin their work as discussion groups, and to resort to parliamentary debate only when it becomes clear that a conclusion cannot otherwise be reached. The method of the assembly proper will, of course, be legislative debate under the rules of parliamentary procedure.

Policy-determining debate

In the previous section we have briefly outlined six different types of debate which may be used for educational purposes. The primary purpose may be that of presenting a public question to an audience, or it may be that of providing experience in debating for those participating. In

this section we shall be concerned with that debating which is engaged in for the purpose of determining policy and equity in situations where those concerned are not primarily interested in the educational outcomes. Educational values are incidental to the main purpose of settling conflicts and disputes, and determining policy. Obviously, it is impossible for us to go into these specialized applications of debate in great detail. Legal debating, for example, involves a study of specialized rules of evidence and rules of pleading which is entirely beyond the scope of this chapter. Most legislative assemblies likewise have developed special regulations to govern their debates. What we shall do here, however, is to offer some suggestions on committee procedure and parliamentary debate which may be applied in most of the situations which the average person will meet.

Committee procedure. Much of the important policy-determining deliberation of large legislative assemblies is done in the committee room. Problems which cannot be handled directly by a group or assembly are referred to committees. It then becomes the business of the committee to investigate the problem and to make a recommendation, or alternative recommendations, to the larger group in whose service they are engaged. The question for us to consider here is what method these committees should employ in their deliberations. Our recommendation is that the committee, in its initial deliberation, should proceed as a discussion group—should attempt to define the problem, analyze the problem, and consider possible solutions to the problem. So far as is possible, this approach should be reflective and cooperative, and should be carried on informally under the direction of the committee chairman. If such deliberation yields a consensus which may be reported as the findings or recommendation of the committee, there is no reason why the committee needs to make any use of debate. The only motion that needs to be made is one which expresses the conclusion of the group, and this is made merely for the purpose of the record, that is, for the minutes of the meeting.

Experience with many committees has shown that this informal procedure is often sufficient to bring about an agreement on the problem. Especially is this true where committee members are accustomed to cooperative procedures and are primarily interested in arriving at the best solution to the problem.

If it becomes clear, as the work of the committee progresses, that it is impossible to reach an agreement through discussion, in the time available to the committee, the chairman should then call for motions and conduct debate on these motions. The procedure here will be that of parliamentary debate, and the work of the committee will be completed when a motion affecting the problem assigned to them has been passed by a majority vote.

We wish here to stress the importance of conducting all committee deliberation on the basis of cooperative discussion, so far as it is possible to do so. By calling for motions at the outset, the chairman is likely to crystallize differences of opinion and conflicts which might have been ironed out by preliminary discussion. There is danger also that the group will fail to define and analyze the problem carefully, and thus fail to secure for the group the information and understanding which they must have if they are to reach an intelligent decision.

Parliamentary debate. Debate conducted under the rules of parliamentary procedure is the accepted method for large legislative assemblies. While each legislative assembly is likely to have certain specialized procedure of its own, there is available, nevertheless, a body of regulations which is commonly used in conducting public business. Most readers of this chapter probably have a passing acquaintance at least with these rules of parliamentary procedure. They are used in class meetings, clubs, fraternities, and the like, wherever business is being conducted in public meetings. Since so much of the debate in which the average person engages takes place under these regulations, every debater should be familiar with the rudiments of such procedure. Many

TABLE 4 [3]

TABLE OF PARLIAMENTARY MOTIONS

MOTIONS	NEED A SECOND?	AMENDABLE?	DEBATABLE?	VOTE REQUIRED	MAY INTERRUPT A SPEAKER
I. Principal Motion					
1. Any main question or any independent matter of business before the meeting..	yes	yes	yes	maj.	no
II. Subsidiary Motions					
2. To amend.....	yes	yes	yes	maj.	no
3. To postpone indefinitely.....	yes	no	yes	maj.	no
4. To refer to a committee.....	yes	yes	yes	maj.	no
5. To postpone to a certain time.....	yes	yes	yes	maj.	no
6. Previous question..	yes	no	no	⅔	no
7. To lay on (or take from) the table.....	yes	no	no	maj.	no
III. Incidental Motions					
8. To suspend a rule..	yes	no	no	⅔	no
9. To withdraw a motion.....	yes	no	no	maj.	no
10. Question of consideration.....	no	no	no	⅔	yes
11. A point of order.....	no	no	no	Chair [a]	yes
12. Appeal from decision of chair.....	yes	no	no	maj.	yes
IV. Privileged Motions					
13. To make a matter of business a "special order" for a given time.....	no	no	no	⅔	yes
14. Questions of rights and privileges.....	no	no	no	Chair [a]	yes
15. To adjourn (unqualified).....	yes	no	no	maj.	no
16. To fix time for next meeting.....	yes	yes	no	maj.	no

[a] Require only decision of Chair; no vote unless appealed.

[3] Quoted with some changes from Gregg's *Handbook of Parliamentary Law* (Boston: Ginn and Company, 1910) in J. M. O'Neill and J. H. McBurney's *The Working Principles of Argument*, pp. 340-342. New York: The Macmillan Company, 1932.

excellent manuals on parliamentary law are available. The standard source is *Roberts' Rules of Order.* The Table of Parliamentary Motions, on page 395, together with the brief explanation of these motions, however, will serve for most occasions.

The principal motion is used to introduce a proposal to the assembly. It is in order only when there is no other motion before the house. The maker of the motion states his proposal and may, if he chooses, speak in its behalf. The motion itself should be a clear, unambiguous proposal which the secretary can record in the minutes. If this motion is seconded, it is then thrown open to debate. During this debate, any of the subsidiary motions may be applied to the main motion. Thus, for example, it may be moved that the main motion be amended; in this case the motion to amend becomes the subject of the debate. If the amendment is carried, then the original motion as amended is before the house. Passing an amendment does not carry the original motion.

The six subsidiary motions listed in the table are given in the order of their precedence. That is to say, each of these takes precedence over those preceding it in the list and yields to those following it. The higher numbers take precedence over the lower numbers. We have already mentioned the motion to amend. Of the other subsidiary motions, the previous question is the only one likely to cause difficulty. Its purpose is to stop debate. In most assemblies it is proper simply to call for the question. If there is an objection, the previous question may then be moved. If seconded and carried by a two-thirds vote, the chairman must then put the question before the house to a vote.

Incidental motions arise out of other motions and are designed to facilitate the consideration of these motions. Since incidental motions rarely come into contact with each other, the order in which they are listed in the table is not significant.

Privileged motions are concerned mainly with the general conduct of the meeting. As such, they arise independently

of other motions and take precedence over other motions with the exception of certain incidental motions arising out of them, and in some cases to subsidiary motions applied to them.

For quick reference and convenience in using the table of motions, we are listing below the specific purpose or object of each motion included in the table.[4]

Objects of Motions

1. Main motion—to bring original business before the assembly.
2. To amend—to modify a question that is before the assembly.
3. To postpone indefinitely—(1) to dispose of a question for the session without voting on it directly; (2) it is used by the opponents of a question to determine their strength.
4. To refer to a committee—to secure the advantage of action by a smaller group, or of greater freedom in debate in dealing with a question.
5. To postpone to a certain time—to defer action on a question to a certain time.
6. Previous question—to suppress debate and bring the assembly to a vote.
7. To lay on the table—(1) to postpone a subject so that it may be taken up at another time during the same session; (2) to stop debate and suppress a question for the session, providing a majority cannot be secured to take the question again from the table.
8. To suspend a rule—to make temporarily possible an action contrary to the standing rules or rules of order of an organization.
9. To withdraw a motion—to expedite business in case of a changed opinion by the maker of the motion.
10. Question of consideration—an objection to the consideration of a question to enable the assembly to avoid irrelevant, unprofitable, or contentious questions.
11. A point of order—to correct a breach of order or an error in procedure.
12. Appeal from decision of chair—(1) to invoke a rule which the chairman has ignored or misinterpreted; (2) to appeal to the assembly to overrule the chairman on any rule where an opinion or a judgment may be exercised.
13. Special order—to set a specific time to consider a certain matter of business when all other things will be set aside.

[4] *Ibid.*

14. Questions of rights and privileges—to secure to the assembly or any of its members some right with respect to safety, comfort, dignity, reputation, or freedom from disturbance.
15. To adjourn—to bring a meeting to a close.
16. To fix a time for the next meeting—to fix a time or place for reassembling.

One of the more important purposes of this chapter has been to define debate properly and to indicate its place in organized society. An enormous amount of misunderstanding continues to exist on these matters. Some people who prefer public discussion as a method of presenting problems to audiences, attack debating indiscriminately without realizing that debate is essentially a method of conducting public business. Such attacks certainly must derive from confusion or stupidity, because anyone with the slightest understanding of human nature must realize that debate in some form is inevitable in the resolution of many problems, if law and order as we know it is going to be maintained. Since this is the case, educational debating would appear to be a legitimate activity for schools and colleges, its chief purpose being the development of proper attitudes toward debate, and skill in its use.

Exercises

1. *Affirmative case.* Prepare an extemporaneous speech in which you present an affirmative case on a proposition of policy. Phrase the proposition carefully and determine the issues. Set out these issues and present adequate argument and evidence in support of each.

2. *Negative case.* Prepare an extemporaneous speech in which you present a negative case on a proposition of policy. As in Exercise 1, phrase the proposition and determine the issues. Consider the types of negative cases discussed in this chapter and plan your own case in terms of this classification. Build a case which will logically sustain a negative position on one or more issues.

3. *Refutation.* Prepare an extemporaneous speech designed to refute some commonly held position, or the argument of some magazine article or editorial. Be certain to make clear in your introduction precisely what it is you are refuting.

4. *Group debate.* Divide the class into groups of six. Assign a proposition of value or policy to each group. Ask three people to defend the proposition and three to oppose it. Let each person, working independently, prepare a four-minute argumentative speech on the side of the proposition to which he has been assigned. These speeches need not present complete affirmative or negative cases, but they should set forth one or two significant, well-supported arguments. Alternate the affirmative and negative speakers with the understanding that each speaker will attempt to adapt to those who have preceded him. He may agree with or refute, as he sees fit, any preceding speaker, affirmative or negative. Team work is not expected; each speaker is on his own. The important thing is to present an effective argument in this kind of give-and-take situation.

5. *Parliamentary drill.* Adopt some general problem as a basis for debate. Let each speaker come prepared to present a motion on this problem and to defend it briefly. Appoint a chairman with authority to call on any member of the class at any time. The first person called on will present a main motion. For the remainder of the hour, each person as called upon is expected to make a motion which is in order, and which is designed to amend, commit, refer, or otherwise advance the proceedings in the direction which he wishes to see them go. Use as many of the motions as possible that are contained in the Table of Parliamentary Motions. Be alert to rise to points of order if mistakes are made.

This exercise creates an artificial parliamentary situation, but it can provide excellent drill in procedure.

6. *Committee procedure and parliamentary debate.* Divide the class into groups of six. Assign a problem to each group. Investigate these problems carefully and discuss them as committees. Let each committee report out a specific resolution, motion, or bill on its problem. Minority reports may be formulated. Following the committee sessions, convene the entire class as a legislative assembly, hear the reports, and proceed to take action on the problems through parliamentary debate.

7. *Other debates.* Arrange to hold several debates in class that are designed to illustrate the different types explained in this chapter.

CHAPTER 16

Radio Speaking and Reading

In general, good speech is good speech whether it is perceived directly by the listener or whether it comes to him via the radio. As radio is perfected mechanically, discrepancies between radio speaking and other speaking are reduced. This is one of the chief purposes of radio engineering. Certain differences are fundamental and basic, however. In this chapter we shall point out these differences and suggest methods by which the speaker may accommodate himself to them.

Little needs to be said about the social importance of radio speaking. The influence of the spoken word has been enormously extended by radio. As a result, the potentialities for social adjustment and understanding through speech have been correspondingly enlarged. Likewise, the possibilities of abuse through the exploitative uses of language present a far greater problem than they did before the radio became a household institution. It is the function of public regulation to keep the radio free and uncontrolled by special interests. It is the function of education to develop speakers who respect the responsibilities which this right to enter into the homes of millions of people imposes upon them, and to develop in as many people as is possible the capacity to listen critically. The radio may become an instrument of exploitation, or it may be the means of creating a nationwide forum whereby all kinds and shades of opinion can be given a fair hearing. Both the speaker and the audience have roles to play.

Differentia of Radio Speaking

Absence of visible symbols

The speaker in the normal speaking situation communicates his ideas and feelings to others through visible and audible symbols. The radio speaker must depend entirely upon audible symbols. Herein lies one of the more fundamental differences between radio speaking and other types of speaking. Most of us are not likely to realize how much we depend upon bodily action and gesture in conveying meaning to others until we are placed in a situation in which we must rely exclusively upon our voice. The speaker's body, through muscular tensions, facial gesture, movement of the arms and hands, and changes of position, is often the key to the emotional attitude of the speaker and serves to emphasize and delineate ideas in countless different ways. The question for the radio speaker, then, is how best to compensate for this loss.

Absence of circular response

A good public speaker or conversationalist always reacts to his audience. What he says and does draws some response from his listeners. This response in turn is used by the speaker as a means of better adapting himself to the situation. He says more if an audience appears to be perplexed; he cuts short the development of a point if he appears to have made the point; he responds to evidences of approval and signs of disapproval. Although all of these signs may lie in the periphery of the speaker's attention while he is speaking, he nevertheless makes some attempt to adjust himself to the situation as he feels and sees it. The radio speaker is unable to do so because he cannot see his audience, nor can his audience see him. Here again is a basic difference between radio speaking and other types of speaking which must be taken into account.

Size and character of the audience

Most radio speakers have a potential audience larger than that which could be accommodated in the halls and auditoriums in which speeches are given. Some radio speakers have a potential audience of millions of people, together with some actual audiences which are far larger in size than any group which could be brought within the range of a speaker's voice, unaided by mechanical devices. What is more, the radio audience is likely to be a much more heterogeneous group. There is no direct monetary charge for a radio speech, and it requires little or no effort to turn it on or off. People in all walks of life have radios in their homes. The result is that the radio is not affected by the selective factors which may serve to limit the audience to people of a given class or economic strata. At least these limiting factors are not nearly so pronounced in the case of the radio. If, for example, a speech is given in an auditorium on Chicago's North Shore, the audience is very likely to be composed of typical North Shore suburbanites. The same speech given over one of Chicago's radio stations would have as a potential audience not only the North Shore dwellers, but the entire city of Chicago, state of Illinois, and many neighboring states as well.

We have pointed out the difference in the potential size and the heterogeneity of the radio audience. A third difference of tremendous importance is the distribution of the radio audience. People listen to the radio in groups of two or three, in their homes, in places of business and recreation, and even in automobiles, trains, and buses as they move across the country. In other words, a radio speaker whose voice is heard by fifty thousand people is not heard by this group assembled in one mammoth hall, nor is he likely to be heard by any group of great size assembled in any one place. His audience consists of hundreds or thousands of single individuals or little groups scattered all over the country, listening to him under a great variety of conditions. This means

that the speech is usually heard under relatively informal circumstances. It also means that the speaker cannot expect the interstimulation which almost always takes place among members of a large audience.

Special problems

While radio engineering has greatly reduced the mechanical problems which confronted the radio speaker when radio was in its infancy, the situation, of course, is still basically different from that of the face-to-face relationship. The speaker, for example, must talk into a microphone; and, if he is to achieve maximum effectiveness, he must accommodate himself to the limitations of this instrument no matter how perfect the microphone may be. He likewise must adapt himself to the carefully planned time schedule of the radio station.

Suggestions for the Radio Speaker

Suggestions which we are giving here are primarily designed for the radio speaker who has no studio audience, or, if such an audience is present, for the speaker who is chiefly interested in the audience which will hear him through their receiving sets. This, we assume, is the typical situation for most radio speaking.

Preparation and speech construction

Under normal circumstances it is wise to prepare the radio speech in manuscript form and then read from the manuscript when the speech is delivered. As a matter of fact, many radio stations require that this procedure be followed, some even requesting that a copy of the speech be filed with the station manager. The usual method of preparing a speech may be used in getting this manuscript in shape. Two principles of speech composition should be especially attended to, however. In the first place, we strongly recommend the use of a relatively simple outline or structure for the speech. Complicated, involved speech plans are seldom

effective in radio speaking. Remember that the radio speaker has fewer devices at his disposal with which to clarify and delineate abstruse patterns of ideas. In the second place, special effort should be made to use attention-getting devices throughout the composition. More than anything else this means an emphasis on vividness in the development of ideas. Use examples, cases, word pictures, stories, anecdotes, maxims, and terse quotations. All of these devices and others like them will serve to keep the listener tuned to the speech. This kind of advice is good for almost any speaker, radio or otherwise, but it is a *sine qua non* in radio. It is altogether too much to expect that listeners who can dismiss a speaker by a slight turn of the dial will bear for very long with dull, uninteresting abstractions. Simply constructed speeches, crowded full of interesting, vivid materials, make the most effective radio composition.

The manuscript from which the speech is to be presented should be neatly typed on 8½ by 11 inch sheets and should be double spaced throughout. The speaker will usually find it advisable to read this manuscript aloud once or twice before he goes on the air. Many speakers find it helpful to mark up the manuscript in practice. That is to say, words which are to be emphasized can be underlined, and punctuation can be added to indicate pauses in reading. Likewise, marginal notations concerning the time required to read portions of the manuscript can be made, thus enabling the speaker to adjust his rate of speaking in terms of the total time available to him.

Use of the voice

Significant vocal variety is the most important aspect of the voice in radio speaking. There are four factors which can be varied: *force* or volume, *pitch* or key, *time*, including rate, quantity and pause, and, finally, vocal *quality*. We know that much of the meaning and feeling of speech resides in these factors. Since the radio speaker is dependent solely upon his voice, these factors are of first importance to him.

Have you not noticed that in telephoning, some people shout as if it were necessary for their voices to reach the listener directly? Radio speakers often react in this same way, but it is quite unnecessary to raise one's voice above the ordinary conversational level. This volume or loudness may be increased and decreased to indicate emphasis and feeling, but the speaker should be warned against sudden changes of volume or extremes in force. The radio engineer can make adjustments to amplify or to attenuate the volume, but he is likely to be caught unawares by a sudden burst or blast.

Pitch, as we have said, is the key in which one speaks. Defined in physical terms, it is a function of the frequency of vibration. Since radio can transmit adequately all of the frequencies which are involved in speaking, the problem here is one of adapting most successfully to the listener. The speaker should talk in the key which he ordinarily uses in conversation, and he should give special attention to varying the pitch in such a way as best to bring out his meaning. Putting it differently, there are two faults which one should guard against: first, a tendency to raise the pitch of the voice under the strain of speaking, with the result that the entire speech is given in a high, piercing or strident key; secondly, monopitch must be avoided. Nothing is much more deadly than a manuscript which is read without modulation or inflection in pitch.

Time is the third vocal factor which the speaker may use to assist him in conveying his meaning. The average conversational rate is recommended. Special care should be taken in preparation to have enough to say so that the speech does not have to be dragged out in order to take up the allotted time; likewise, the speaker should be confident that he can complete his speech without hurrying it. The rate of speaking may then be varied in terms of the type of material with which the speaker is dealing. Easily comprehended materials may be presented more rapidly than difficult materials, and the tempo will normally vary with the enthusiasm and spirit of the speaker. Quantity is under-

stood as the amount of time given to any speech sound, and it may be used for purposes of emphasis. Slow, measured speech, for example, can be used in certain sentences which the speaker is especially interested in getting across to his listener. Here, the time given to each speech sound, each speech syllable, and each word will be increased, thus calling attention to the material and serving to emphasize it. The pause can be used both for purposes of punctuation, to bring out grammatical construction, and for the purpose of emphasizing the materials which precede and which follow the pause.

We are interested in vocal quality chiefly because it reflects the emotional attitude of the speaker. Of all the vocal factors which we have been discussing, the quality of the speaker's voice is the most sensitive and the most revealing index of the emotion that he is experiencing while he is speaking. What is more, it is the most difficult factor for the speaker to control voluntarily. If one actually feels what he is saying and does not inhibit this feeling, it is likely to be reflected in the quality of his voice without any conscious effort on his part. Too many radio speakers read their speeches mechanically and try to give the appearance of feeling mainly by varying the force of their utterance. While it is true that the average person speaks with greater force in an emotional situation, he also speaks with a different quality. Thus, if the speaker, as it were, turns on this force without actually experiencing the emotion which he is trying to indicate, the effect is likely to be artificial and pedantic. All of this simply means that the reader must *think the thoughts* and *feel the feelings* which he is trying to convey to others. If he does this, it will not be necessary for him to shout and rant, because the quality of his voice will reflect the different shades of feeling which he experiences.

In summary, it may be said that the speaker's voice should reflect a firm, confident, sincere, pleasant personality. While the "radio personality" may be a tenuous concept, it certainly is true that listeners do form impressions of the

speaker. We have all met the loud, belligerent, bellowing type of radio speaker. We have all met the oily, ingratiating type of speaker. We have all met the sweet, cloying, crooning variety. We most emphatically do not like them. We like the person who gives the impression of being frank, honest, straightforward, and poised. Since most of these impressions are derived from the speaker's voice, it behooves the radio speaker to give special attention to these vocal factors.

Cantril and Allport[1] find that "the majority of listeners are interested in the personalities of the announcers and the speakers whom they hear."

> Voices have a way of provoking curiosity, of arousing a train of imagination that will conjure up a substantial and congruent personality to support and harmonize with the disembodied voice. Often the listener goes no further than deciding half-consciously that he either likes or dislikes the voice, but sometimes he gives more definite judgments, a "character reading" of the speaker, as it were, based upon voice alone.

Bodily action

We have said that the radio speaker must depend upon audible symbols. While this is true, it is perfectly possible for him to gesture *for his own benefit* while he is speaking. Bodily action has two functions in any speech situation: first, to provide signs which the audience may interpret, and, secondly, to free the speaker himself. It is almost impossible for a speaker to talk feelingly without some bodily action. We should be greatly remiss were we to imply by anything that we have said that the radio speaker should stand stiffly before the microphone without movement of any kind. Quite the contrary, if his vocal interpretation is going to be effective, it will be necessary for him to enter into the speech physically, with his body, very much as though he were conversing in a face-to-face situation. Obviously, there are cer-

[1] Cantril, Hadley, and Allport, Gordon W., *The Psychology of Radio*, p. 109. New York: Harper & Brothers. 1935.

tain precautions which must be observed. The most important of these is that the speaker keep his distance from the microphone relatively constant. If he weaves back and forth, he is likely to produce effects which sound very much like the wind in the trees. Likewise, he must be careful not to produce extraneous noises such as might be produced by gesticulating with one's manuscript, shuffling one's feet, or, heaven forbid, shaking the supports of the microphone or pounding the table!

It is ordinarily better for a speaker to stand in giving a radio speech. In this posture he is likely to be more alert to his task, and his own speaking apparatus is less likely to be constrained. This rule is by no means inflexible, however, and in certain types of radio speaking it is better to be seated. Certainly this is the case in a group discussion of any kind. The chief advantage of being seated easily and comfortably while speaking is that it enables the speaker more easily to adopt an informal attitude and a conversational manner of speaking.

Attitudes for the radio speaker

Since the speaker's audience is not visible to him and since his audience is distributed in small, informal groups, it is often necessary for him to improvise techniques which will help him recognize these factors. One of the best devices is for him to keep before him an image of the actual situation which he is facing. For example, it is possible for him to imagine that he is talking to a small group seated around a fireplace in a living room, in such a way as to approximate for himself this very situation. In practicing a speech, for instance, one will often imagine the circumstances which he is going to have to face and try to keep this situation in mind as he goes over the speech. The radio speaker can use this same technique. In both cases one has to imagine the situation, including the audience and the occasion, and then try to adapt himself to this image. An experienced radio speaker becomes habituated to these adjustments, but the

inexperienced speaker is very likely to present his speech as though he were delivering it to a huge audience. A mental picture of the proximate situation will help to obviate this difficulty.

The realization on the part of the speaker that he is being permitted to enter into the homes of his listeners should also affect his behavior in other ways. In a very real sense of the word, he is a guest in the homes of his listeners. The decorum and amenities which this relationship implies should be observed by the radio speaker.

Radio Discussion

The types of public discussion considered in Chapter 13 are well adapted to radio. Especially is this true of the panel and the dialogue. The relative informality and the conversational approach lend themselves admirably to the precise audience situation which the radio presents. The *University of Chicago Roundtable,* participated in by faculty members and guest speakers, is an excellent example of such a program.

The radio panel should be prepared in much the same way as any other panel. There should be no script and there should be no attempt to rehearse the discussion. The group can agree on their subject and work out an outline of the topics they are going to consider, but beyond this the preparation should be confined to individual reading and reflection. The chief merit of such a program is its freshness, variety, and spontaneity.

America's Town Meeting of the Air is an example of a radio symposium in which both the symposium speeches and the forum period following are broadcast.

Critical Listening

The best corrective for abuses of radio speakers is a critical audience. We can turn off those who bore us, and we can learn not to be cudgeled or beguiled into unintelligent be-

havior by those who would exploit us. The following suggestions may be helpful:

1. Repetition of an idea does not prove it.
2. Slogans are often oversimplified formulae; beware of them.
3. You can get testimonials to support almost anything, especially if you are willing to pay for them.
4. Emotionally toned language may be used to beg the question or to cover up the lack of substantial argument.
5. It is easy to give the impression that everyone is doing it—the illusion of universality, the band-wagon technique.
6. Hasty generalizations can be drawn from too few cases and also from cases which have been carefully selected to make a point.
7. Beware of appealing arguments which you would not be willing to accept in another context.
8. An attack on personalities does not affect an argument unless these persons are themselves the subject of the argument.
9. A half-truth can often be made to pass as the whole truth.
10. Refuting a weak argument or irrelevant argument does not prove or disprove the conclusion it was offered to support.

Radio Reading

The greater part of all speech heard on the air, from the commercial plug to the best drama, is, as we have said, reading. Those who work professionally in the studios—announcers, news broadcasters, commentators, and actors—must be proficient as oral readers if they are to meet the requirements of their jobs. It is only on special types of programs, such as the informal discussion or the interview, or when the performer is a well-known person whose skill in extemporaneous speaking has been established, as is the case with several sports announcers, that extemporaneous speaking is allowed. The ability to read straightforward prose material easily, simply, directly, conversationally, and communicatively, is usually an absolute necessity for anyone who wishes to be effective before the microphone.

Radio plays, unlike those of the regular theater or the moving pictures, are read from manuscript. In fact, it is

in a way a misnomer to call radio acting *acting*, for technically it is more a form of interpretative reading. Movement about the studio is usually limited to that necessary to secure certain relations to the microphone. The fact that the actor cannot be seen by his audience makes pantomime useless except as an aid to the actor himself. Also, since the actor is not seen, the presence of a script is not a distraction to the audience. There is, therefore, no need for spending time on memorization of lines. On the average program, in fact, there is rarely sufficient rehearsal time allotted to permit memorization, even if the actors should wish to memorize. The pressure for speedy production is so great in most studios that ability in sight reading and facility in quick characterization are distinct assets to the radio actor. Many of the stage actors appearing on the air regret the short rehearsal time and the necessity for rapid development of characterization, as they feel that such conditions promote a tendency to mere type playing and facile character sketching, rather than genuine acting. The artistic problems involved need not concern us here. The important fact for us is that in radio the actor's art is based much more completely upon ability to read lines well than it is in the regular theater, where other factors play more important parts in creating the total impression. The basic technique required for acting in radio is the ability to read dramatic dialogue effectively.

The radio also offers opportunity for the interpretative reading of poetry and prose literature. A number of national programs have at various times utilized the services of a single interpretative reader. Many educational programs throughout the country feature interpretative readers presenting poetry hours, story hours, or excerpts from significant prose literature.

Radio has produced an interesting collateral development of importance to any individual who may speak or read in public. The technical improvement of transmitting and receiving apparatus has led to the development of excellent

public address systems. These are rapidly being installed in most of the larger school and civic auditoriums. The installation of such equipment has greatly changed the problems of delivery for many speakers and readers. In halls equipped with such public address systems, the speaker or reader is no longer confronted with the problems of volume and projection, but rather with that of using the microphone effectively. Radio technique, in other words, has become important in many other speaking situations.

With the steadily increasing use of radio itself, and with the development of public address systems, the occasions on which the average man or woman may have need of skill in using the microphone have greatly multiplied. The techniques of radio reading are by no means of concern only to those who plan to follow radio as a profession.

Basic problems of radio reading

The first fact to note about radio reading is that the basic problems encountered are no different from those of any other form of reading aloud. The radio reader's initial concern must be the understanding, appreciation, and assimilation of his material. After he has mastered the meaning, he then must have general speech skill sufficient to enable him to express that meaning effectively. The microphone, as we have seen, introduces new factors, lessening certain difficulties and increasing others. The radio reader may not need the same degree of bodily control required before a seeing audience. A voice too weak for successful reading before an audience of any size may be perfectly adequate when heard under studio conditions. On the other hand, the microphone may emphasize unpleasant vocal characteristics that the reader did not know he had. When the audience can see the reader, it gets impressions of personality and intention from his appearance and manner which supplement the sounds he makes. At times, in fact, an audience may respond as the reader wishes in spite of what it hears. A smile may do much to alleviate an irritatingly harsh voice. Visible signs of

physical vitality may offset a flat, colorless, uninteresting tonal pattern. Not so in radio reading. The reader's age, sex, personality, mood, understanding, attitude, all come to the audience through what it hears and through this alone. The prospective radio reader needs to know where his strengths and his weaknesses lie so that he may adapt them intelligently to the requirements of the new speech situation. But microphone technique offers no short cut to the basic reading skills. To be sure that one has reasonable mastery of the general techniques of impression and expression is the best way to be sure of reading well over the air.

Special problems

The special problems of radio reading arise from the same sources we have mentioned in connection with radio speaking: the nature of the radio audience-reader relation and the mechanical conditions imposed by the microphone and other broadcasting apparatus.

The fact that no face-to-face relation exists between reader and listener not only makes the vocal part of speech of supreme importance, but it also requires a high degree of imaginative projection on the part of the reader. Since his listeners are not before him in flesh and blood, he must create them imaginatively if he is to get any helpful sense of their reaction to the material he is reading. Without this sense of hearer reaction, it is almost impossible to read effectively.

Radio reading, like radio speaking, should be rich in conversational quality. It should sound as nearly as possible like extemporaneous speech. Any suggestion of mere word calling or excessive formality will raise a barrier between reader and listener. It is especially important in radio reading that the process of translation of the printed symbols into speech sounds be totally unobtrusive. Much practice in the reading of all kinds of material as conversationally and communicatively as possible to a hearer four or five feet from the reader will promote the general reading skill needed in the studio.

The reader needs to bear in mind that the ear, through which all his meaning must be received, is a somewhat slower and less discriminating organ than the eye. He must take pains to make his meaning clear in terms of sound, giving his hearers time and opportunity to assimilate what they hear. This means that particular care should be taken in the use of rate and inflection. It has been found that the most effective rate of speaking on the air is from 125 to 140 words a minute. The radio reader may need to vary this rate considerably with different material, but he should see to it that increased speed does not lessen intelligibility. Phrases should be pointed by the use of appropriate changes in pitch, and the pause should be used to make the relation of phrases clear. No good reading is possible unless the reader thinks, feels, and imagines his material as he reads it; but this principle is of particular importance in reading over the air, where the absence of visible symbols and circular response add to the difficulties of communication.

The need for constant audible intelligibility makes enunciation of unusual significance in radio reading. Slovenly articulation, muffled vowels, and slurred consonants will hinder and diminish communication. In no branch of speech is good diction more important. But in considering diction, the radio reader needs also to bear in mind that since radio is a medium of mass communication, his audience is almost sure to be a heterogeneous one, with a wide diversity of habits of enunciation and pronunciation. Enunciation which is so meticulous as to call attention to itself with the majority of listeners is almost as bad as that which is slovenly. In the same way, pronunciation which differs too completely from generally accepted American standards will be a bar to the most successful communication. The best diction for the radio reader is one which will be recognized as that of an educated and cultured person who is careful in speech, but not an extremist either in enunciation or pronunciation. The student will do well to review the principles presented in Chapters 2, 3, 4, and 5.

Position, breath, pause

It is impossible to lay down any exact rules about how far the reader must stand from the mike, the volume he should use, or the pitch which is best. These factors vary with different studios and with different voices. They can be ascertained exactly, only by experiment. There are a few general suggestions, however, which will be found useful.

Ordinarily, a position some eighteen inches to two feet before the microphone is best. If one gets closer, there is a tendency to exaggerate the lower frequencies and to make the voice sound tubby. Read as though the hearer were four or five feet away, using a normal, conversational voice unless special character effects are needed. Remember that the engineer will not be able to compensate for too great diversity in volume. You must get your emphasis within the limits which the equipment can handle without "blasting." Too sudden increase in either pitch or volume must be guarded against. If the material calls for a loud tone or great emotional intensity, try to get the effect without actually increasing your volume and intensity beyond proper limits. If this cannot be done, turn away or step back from the microphone before reading the forceful passage.

Watch your breathing. The microphone will pick up the sound of an indrawn breath most distractingly, as it will other extraneous sounds you may produce. Rattling of paper, turning of pages, clearing the throat, smacking the lips, all will be transmitted with disconcerting gusto. The microphone is highly cooperative but absolutely undiscriminating. If you do not want a sound to go out over the air, you must see to it that it is not produced in the studio.

Remember that a pause on the air is not filled with any visible symbols to keep meaning alive. This means that timing is unusually important in radio reading. There must be pauses, more in fact that in reading where the reader can be seen, but they must never be so long as to become mere blank spots. The audience must be given an opportunity

to establish clearly the relation of each phrase or key word to its context, and yet the sense of steady progression must never be lost. Radio reading that drags will be ineffective.

Study through listening

The radio has given all of us an unusual opportunity for hearing many types of reading aloud. The student should avail himself of this opportunity by critical listening. Some of the most skillful readers in the world are to be heard over the air. There are others who will serve as examples of what should be avoided. Discriminating between the good and the bad is an excellent means for developing one's own standards and abilities.

Questions and Exercises

1. Prepare a two-minute announcement of some coming campus event. Determine your normal speaking rate, and then write the announcement, using the number of words you would normally speak in two minutes. Practice aloud until you can give your announcement "on the nose." Present it over your radio or public address equipment.

2. In the same manner, prepare and present a three-minute news report.

3. Present three or four minutes of straightforward prose material, varying your rate under the direction of a classmate. This exercise will give you practice in keeping your mind on the material while you are following directions from the control room.

4. Prepare the script for a short interview. Present the interview over the equipment, making it sound as spontaneous and conversational as possible.

5. Read some exciting or dramatic material, attempting to create the mood without resorting to too much loudness. Utilize variety in rate and quality to get your effect.

6. Prepare three or four minutes of material in which you feel you are at your best. Present it over the equipment so that you are unseen, and, as far as possible, unknown. Get the audience reaction to the type of personality suggested on the air.

7. Present a short program of prose or poetry, imagining that

you are on a nationwide broadcast. See if you can visualize a typical listening group while you are reading.

8. Analyze carefully the work of some of your favorite radio readers. What suggestions do you get from them?

9. Prepare a six-minute persuasive speech on some contemporary social, political, or economic problem. Prepare the speech in manuscript form with special attention to its adaptation to the radio. Read these speeches and criticize them as radio speeches. Consider both composition and delivery. This same exercise may be repeated with expository speeches.

10. Present extemporaneous radio speeches. Again criticize the speeches from the standpoint of composition and delivery. Compare them with the speeches read from manuscripts.

11. Broadcast a panel discussion or a dialogue. Provide appropriate introductions and conclusions for these programs and observe time limits carefully. Make the programs spontaneous, unrehearsed discussions, but be certain that each participant has investigated the problem carefully. Experiment with the different types of debate in the radio situation.

12. There are many types of radio programs involving public speech, discussion, and debate. Study these programs, discuss them, reproduce them in class with different subjects. Exercise your own ingenuity and imagination in adapting these programs and working out original speaking programs.

CHAPTER 17

The Speech Laboratory

The laboratory study of speech may be approached through the methods and equipment of several of the natural sciences. Physics, anatomy and physiology, and experimental psychology have contributed to the knowledge of speech which has been briefly set forth in preceding chapters of this book. A laboratory is useful to a department of speech—in research, in cooperation with the speech clinic, and in teaching—insofar as it is staffed and equipped to make tests and measurements of the physical, physiological and psychological aspects of speech. It will be our aim in this chapter to discuss some of the ways in which a laboratory can be of service in these functions, and to describe some of the basic equipment.

Let us dispel at the outset the notion, or hope, that there is any laboratory instrument that is capable of "analyzing the voice" and delivering a judgment of its good or poor quality or of its adequacy or effectiveness in speaking. There is no machine that will take the place of the trained ear and the experienced critical judgment of a good teacher. The aim of the laboratory study of speech is to extend our scientific knowledge of speech and to furnish the student and teacher with facts and with methods of finding the facts about speech. The study of the measurable differences between good and poor voices, or between good and poor speech, depends, first of all, on someone's judgment of what is good or poor. The attitude of the worker in the laboratory is objective.

The Objective Attitude

Scientific knowledge is described as knowledge that is *true, accurate,* and *systematic.* We accept a scientific fact as true

when it has been verified by repeated observations. We expect it to be stated, if possible, in quantitative as well as qualitative terms; and we expect a scientific fact to be related to other known facts in an organized, logical system.

The scientific worker in a laboratory is guided by these principles. In order to guard against mistakes, he checks and rechecks his observations. He may set up experimental situations in which he can control the conditions while he observes and measures the isolated factors which he wishes to investigate, or he may collect large numbers of observations and measurements for the purpose of comparison and correlation. An important part of his work is to develop instruments and methods for recording and measuring phenomena more accurately than he can with his unaided senses. He analyzes the results of his experiment or survey, often making use of the refinements of the statistical methods to discover averages, tendencies, trends, and relationships. He can then draw conclusions, being careful to limit his conclusions to the controlled factors in his experimental situation, and trying not to let his own preconceived notions or prejudices or wishes in regard to the outcome of the experiment enter into his reasoning. Then he attempts to relate what he has found to what has previously been known or proposed about the subject. And, finally, he may publish a report of his work, not only to announce his discoveries, but also to provide a complete account of the circumstances so that other scientists may criticize his work and repeat his observations, duplicating the conditions exactly, to test the truth and accuracy of his conclusions.

Through such work, the laboratory investigator has developed an attitude which has come to be called "the scientific attitude" or "the objective attitude." He cultivates scepticism, the habit of asking for proofs, of suspending judgment, of questioning the truth of facts and the soundness of inferences. He cultivates humility, realizing that his observations and his thinking are influenced by his desires and beliefs and dislikes, but trying always to prevent

these factors from distorting his results. He does not expect that his findings will be accepted as valid on his word alone, and he is not offended when other scientists postpone belief in his statements until they can confirm them by repeating his work and examining his reasoning. He applies rigorous tests to his own work and to the work of others, and he expects others to be equally critical.

To hold steadfastly to this austere attitude is, of course, a high and difficult ideal. Scientific workers, like other human beings, may be prejudiced, impatient, lacking in breadth of knowledge and outlook, preoccupied, worried, tired, lazy, or even vain and ambitious. For these or other reasons, lapses from strict scientific integrity may and do occur. But the ideal is cherished as the surest way to dependable knowledge. The study of speech is not "a science," but the student of speech may adopt the scientific attitude and the scientific method.

Functions and Equipment

Function and equipment in the speech laboratory are interdependent. Certain functions, such as cooperation with the speech clinic, can be carried out only if the necessary equipment is available; and, conversely, certain kinds of equipment are necessary only if highly specialized research projects are to be undertaken.

Cooperation with the speech clinic

The college speech laboratory often collaborates with the speech clinic in the routine of clinical tests and measurements, collecting data which are of value both to the clinician and the research worker. The equipment for such tests and measurements is usually shared by the laboratory and the clinic. Such equipment may include the materials for various psychological and phonetic tests, apparatus for measuring acuity and discrimination in hearing, equipment for recording and measuring the movements of parts of the body

in breathing and speaking, and phonographic recording and reproducing devices.

Research

The physical equipment of a laboratory for research in speech varies according to the interests and training of the laboratory personnel. The needs of research are often highly specialized, and, although some standard instruments and tools may be bought ready-made, equipment must often be designed and built by the laboratory as the need arises. Sometimes existing devices can be adapted to new uses, or equipment for special purposes can be assembled from available standard elements when the necessary technical knowledge, skill, ingenuity and resourcefulness are available.

Some laboratory instruments are extremely expensive and require technical skill to use them and to keep them in working order. A high-quality, high-speed oscillograph, for example, which is especially designed and built for the purpose of recording the sound waves of speech for harmonic analysis, may cost thousands of dollars. X-ray equipment, for observing or photographing the speech mechanism in action, is expensive and is also dangerous in the hands of untrained operators. Such equipment is found in only a few speech laboratories.

Brief mention has been made in the preceding chapters of a number of devices for studying, recording, and measuring the physiological and physical phenomena of speech. It is impossible in such a book as this to present a complete or even a representative treatment of the great variety of devices and methods which have been, or might be, used in the laboratory study of speech. Besides photography, X-ray photography,[1] and palatography,[2] there are numerous other means of recording the movements of the lips, jaw, tongue,

[1] Russell, G. Oscar, *Voice and Speech*. New York: The Macmillan Company, 1931.

[2] Moses, Elbert R., Jr., *A History of Palatography Techniques*. Ann Arbor, Michigan: Edwards Brothers, 1940.

velum, and other parts of the body in breathing and speaking: for example, using smoked paper, waxed paper, or other treated surfaces, with mechanical, pneumatic, electromagnetic, electronic, and photographic systems coupled to the moving parts.[3] Descriptions of these devices are usually to be found in the reports of the research in which they were used.[4]

Acoustic measurements of speech sounds present special problems. The standard equipment of the acoustics laboratory,[5] while indispensable, is not adequate for every purpose in the study of speech sounds. For the measurement of the rapid frequency variations in normal, connected speech, for example, instruments for measuring steady tones are not applicable. In the speech laboratory one has recourse to the graphic method. The sound waves are usually recorded phonographically and enlarged to a convenient size from the phonograph record; then the wave lengths are measured on the enlarged graph. The frequency is easily computed from the well-known relationship of frequency, wave length, and velocity (in this case, the velocity of the recording surface). Several instruments have been used for making the graphic enlargement of the waves from the phonograph record.[6] This method of measurement, though accurate, is laborious and tedious. Other instruments are

[3] Wendt, G. R., "Methods of recording action," *Archives of Psychology*, No. 228, July, 1938. This monograph is a theoretical and practical discussion of apparatus for the psychology laboratory; it contains much of value for the laboratory student of speech.

[4] For examples, see articles in *Archives of Speech, Speech Monographs, Journal of Speech Disorders, Quarterly Journal of Speech*, and the numerous psychological journals.

[5] Olsen, Harry F., and Massa, Frank, *Applied Acoustics*, sec. ed., Chaps. 3 and 4. Philadelphia: P. Blakiston's Son & Company, Inc., 1939.

[6] One such device, developed and improved by Metfessel, Simon, and Cowan, is described in detail by Cowan in the monograph entitled "Pitch and Intensity Characteristics of Stage Speech," *Archives of Speech*, Supplement, December, 1936. The method has been discussed more recently by the same author in an article entitled "A Technique for the Measurement of Intonation," *Archiv für vergleichende Phonetik*, Band 3, Heft IV, Oktober 1939, pp. 223-234. Tiffin, J., and Steer, M., "The Vibrograph," *Quarterly Journal of Speech*, 25, 1939, pp. 272-278, describes a similar instrument.

being developed for recording directly the frequency and intensity of speech sounds.[7]

Teaching

The contributions of the speech laboratory to teaching can be classified under three headings: in discovering information of value to the teacher and student of speech, in training laboratory workers in the objective study of speech, and in developing skill in the use of instruments and methods which serve directly as aids in teaching and learning the skills of speech. In all of these fields, one of the most important developments of recent years is the increasing use of the recording machines, which provide phonograph records for immediate reproduction.

The use of phonograph recordings is essential and basic in many of the techniques of experimental phonetics. Speech can be recorded in the laboratory or in the field and reproduced repeatedly for study by ear or for physical measurement. In certain studies of the perception of speech, it is essential to repeat speech sounds identically. Such repetition is impossible except from a phonograph record. In the practical study of phonetics, for ear-training and for the accurate comparison of dialects, the phonograph is essential. Students of rhetoric, public speaking, interpretation, and acting use recorded examples for repeated, careful, detailed study which would otherwise be impossible. And in the speech clinic and the classroom, phonograph recordings are being used more and more widely as an aid in diagnosis, for teaching, for motivation, and for measuring progress.

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[7] Grützmacher, M., and Lottermoser, W., "On an Inertia-less Procedure for Taking Phonophotographic Records," *Akustische Zeitschrift*, 2, 1937, pp. 242-248. See also, by the same authors, "Application of the Pitch Recorder to Mathematical, Phonetic, and Musical Problems," *Akustische Zeitschrift*, 3, 1938, pp. 183-196.

Obata, J., and Kobayashi, R., "Direct-reading Pitch Recorder and its Applications to Music and Speech," *Journal of the Acoustical Society of America*, 9, 1937, pp. 156-161. See also, by the same authors, "An Apparatus for Direct-recording the Pitch and Intensity of Sound," *Journal of the Acoustical Society of America*, 10, 1938, pp. 147-149.

The requirements of the broadcasting and motion-picture industries have brought about rapid progress in the quality, stability, convenience, and inexpensiveness of recording equipment. The best machines available to schools ten or fifteen years ago were not much better than office dictating machines, which serve their purpose adequately if the reproduced speech is merely intelligible. Such instruments are already obsolete, although they serve certain limited purposes satisfactorily. Direct recording and reproduction of fairly good quality are now available from a number of recording machines of different types, using wax cylinders, magnetic steel tapes or wires, aluminum discs, and discs of plastic-coated or lacquer-coated paper or metal. Greatly improved magnetic tape recorders have recently become available. They are much more economical than disc recorders in drill and practice situations, where a permanent record is not required. The same loop of tape or wire is magnetized over and over again, the previous record being erased as each new record is made. The machines most widely used in schools and colleges are of the type which records on discs coated with a cellulose nitrate lacquer which is soft enough to be engraved readily in the recording process, but tough enough to survive many playings, with proper care.

The Phonograph

The modern electroacoustic phonograph is made possible by the perfection of two basic inventions, the telephone and the vacuum tube amplifier. Earlier phonographs were less successful principally because the recording device had to be operated directly by the acoustic power of the sounds to be recorded. As we have seen, the acoustic power of speech and music is extremely small. In modern instruments, a telephone transmitter, or microphone, furnishes a means of changing acoustic energy into electrical energy, and the vacuum tube amplifier supplies abundant power to operate the recording mechanism. The amplifier and its associated

circuits also furnish a far greater flexibility of control over the whole recording process than was previously possible.

The essential parts of the recording and reproducing phonograph are as follows:

1. A *turntable*, which is rotated by a motor and drive mechanism at a constant speed.

For recording sound

2. A *microphone*, which translates sound waves into corresponding feeble electrical oscillations.
3. An *amplifier*, which produces stronger electrical oscillations corresponding to the output of the microphone.
4. A *recording head*, or *cutting head*, which translates the amplified electrical oscillations into motion of a *stylus* or cutting needle so that it embosses or engraves on the moving record surface an undulating groove which represents the sound waves.
5. A *feed mechanism*, which carries the recording head at a constant speed across the rotating record surface so that the groove is a spiral, either from the outside to the inside or from the inside to the outside of the disc.

For reproducing sound from the record

6. A *reproducer*, or *pickup*, which translates the motion of a needle following the undulating groove on the record into weak electrical oscillations.
7. An *amplifier*, which produces stronger electrical oscillations corresponding to the output of the pickup.
8. A *loud-speaker*, which converts the amplified electrical oscillations into motion of a diaphragm so that the surrounding air is disturbed by sound waves like those which were originally recorded.

An ideal system would record and reproduce sound without distortion of any kind, so that the reproduction would be exactly like the original, with nothing added or subtracted or altered in any way. This means principally that the system must have the following properties: (1) uniformity of response to waves of all frequencies within the desired limits; (2) freedom from nonlinearity within the desired intensity range; and (3) freedom from extraneous noise generated in the system. One faulty element may render useless any superiority that may exist in the rest of the

system. Let us examine the practical recording and reproducing system step by step and see where it is likely to fall short of the ideal.[8]

The recording room

The first factor to be considered in the practical recording situation is the *room* in which the sounds are to be produced by a person and picked up by the microphone. It has already been mentioned that rooms for broadcasting and recording should be less reverberant than rooms for listening to speech or music. One of the reasons is that the microphone does not distinguish between the sound waves that come direct from the source and those which are diffused throughout the air in the room by multiple reflections, while our two ears comprise a highly directional sound collecting system which enables us to discriminate to some extent against the generally diffused sound. Most classrooms are too reverberant for good recording. The ratio of direct to reverberant sound may be improved by talking close to the microphone or by using a "directional" type of microphone, but neither of these measures is as satisfactory as proper acoustic treatment of the room.

In many cases, satisfactory acoustic treatment need be nothing more than the addition of absorbent material in the form of carpet on the floor or draperies to cover the hard-surfaced walls and blackboards. The best results, however, may be assured by thoroughgoing treatment, fol-

[8] Excellent practical advice on sound recording and reproducing equipment has recently been prepared in nontechnical language in the reports of the Committee on Scientific Aids to Learning, Irvin Stewart, Director, New York City. The titles of the pertinent reports so far issued are:

Broadcast Receivers and Phonographs for Classroom Use, September, 1939.

Central Sound Systems for Schools, April, 1940.

Sound Recording Equipment for Schools, April, 1940.

Several useful booklets have been published by manufacturers and distributors of recording equipment. One of the best of these is *How to Make Good Recordings*, Audio Devices, Inc., New York City.

Advanced and up-to-date technical information is available in the textbooks and handbooks of electrical and acoustical engineering, in manufacturers' catalogues, and in the technical and trade periodicals.

lowing the advice of acoustical engineers who are experienced in the design of studios for broadcasting or recording. For certain research purposes, such as the measurement of the intensity of speech sounds, it is desirable to have a room made as nearly completely dead as possible. Such a room and, consequently, such research is a luxury beyond the means of most speech laboratories.

A second important property of the recording room is that it must be free from noise. Footsteps in the hall outside or on the floor above, or the clatter of a typewriter in a nearby office, or even the ordinarily unnoticed noise of a ventilating system or of automobile traffic on a nearby street may prove to be intolerable in the recording room. The noise problem may be solved by acoustic insulation, or by choosing an isolated room or a quiet hour of the day for making recordings.

The microphone and its use

The second factor in the recording system is the *microphone.* Microphones in a great variety are available at prices ranging from less than a dollar for the poorest to more than the cost of a complete recording system of the inexpensive class. A microphone of the highest quality is necessary only when all of the other components of the system are equally good, but a poor microphone introduces distortion which cannot be corrected in later stages of the recording process. In general, the higher the quality of the microphone, the less sensitive it is. In other words, the better the microphone, the more amplification is required. Microphones of the highest quality require the use of a "pre-amplifier" in addition to the main recording amplifier.

The *carbon microphone,* such as is used in the telephone and in other communicating systems, is extremely sensitive, but it has the disadvantages (for recording) of limited frequency response and of generating noise ("carbon hiss"), besides requiring battery current for operation. The *crystal microphone,* which makes use of the property of certain crystals, such as Rochelle salts, of generating electricity in

response to pressure (the *piezoelectric effect*), exists in two types. In one, the *sound-cell type,* the sound waves exert their pressure variations directly upon the crystals. In the other, the *diaphragm type,* the sensitivity of the microphone is increased by the use of a diaphragm attached to the crystal so that the pressure of the sound waves over a larger surface is concentrated on the crystal. The increase in sensitivity is accomplished at the expense of uniformity of frequency response, and there is a decrease in sensitivity to waves of the frequency range above 5000 cycles, which contribute to the naturalness of the reproduced speech. The nonuniformity of frequency response, due to resonance of the diaphragm-crystal combination at a frequency which lies within the speech range, is regarded as an advantage in communicating systems where intelligibility is more important than naturalness of reproduction. Crystal microphones are widely used. The piezoelectric effect varies slightly with temperature and ceases entirely and permanently at about 130 degrees Fahrenheit. Crystal microphones, pickups, and cutting heads must, therefore, be protected against such high temperatures.

There are two other types of microphone in common use: namely, *dynamic* and *ribbon* microphones. Both of them make use of the fact that electricity is generated in an electrical conductor when it is moved in a magnetic field. In the dynamic microphone, the moving conductor is a coil of light wire (*moving coil microphone*) or a straight wire (*inductor microphone*) suspended between the poles of a magnet and attached to a diaphragm so that the force of sound waves is communicated to it. In the ribbon microphone, the moving conductor is a ribbon of very thin, light metal (about .0005 cm. thick, in a typical example) which serves as both moving conductor and diaphragm. Under certain conditions, the electrical response of the ribbon microphone corresponds to the particle velocity of the sound waves; hence, it is often referred to as the *velocity microphone.* The dynamic microphone can be made quite rugged

in construction, and, like the crystal microphone, it is often found in portable systems. The ribbon microphone is frequently seen in studio installations.

Microphones are also classified as *nondirectional, bidirectional,* and *unidirectional.* Most microphones are relatively nondirectional, being almost equally sensitive to sound waves approaching from any direction. The velocity microphone is bidirectional, being equally sensitive to waves approaching from the front or back of the ribbon, but relatively insensitive to waves approaching it from the sides. A more or less unidirectional characteristic is achieved by several designs, one of the best being the combination of two microphone elements in one housing in such a way that for waves approaching from the back the outputs of the two elements are opposite in phase.

Improper placement of the microphone with relation to the source of sound may introduce distortion. Some microphones have a decreasing response to waves of the higher frequencies as the source of the waves is moved from the front to the side of the microphone. This is not true of the nondirectional dynamic, the crystal, or the velocity microphones, but even with these instruments, consideration must be given to the fact that some sounds are emitted directionally by the source. This is true of the waves in speech which have frequencies higher than about 6000 cycles per second, the wave lengths of which are comparable in size to the size of the mouth opening.[9] Some difference in the naturalness of certain reproduced speech sounds may, therefore, be expected when the speaker turns his head away from the microphone.

Talking close (within two or three inches) and directly into the microphone introduces extraneous low-frequency sounds which are due to the impact on the microphone of the puffs of air which accompany certain speech sounds.[10]

[9] Dunn, H. K., and Farnsworth, D. W., "Exploration of Pressure Field around the Human Head during Speech," *Journal of the Acoustical Society of America,* 10, 1939, pp. 184-199.

[10] *Ibid.,* p. 189.

Another common form of distortion exists in talking close when a velocity microphone is used, for the low-frequency response of the velocity microphone is accentuated when the distance from the source of sound to the microphone is less than a wave length. The resulting deepening of the voice is much admired by some people because it appears to flatter their voices, but it is nonetheless a distortion. It is interesting to note that in a recent professional demonstration of a high-quality, distortion-free, frequency-modulation radio transmission system, it was found necessary to place a barrier around the microphone in order to keep the announcer at the proper distance.[11]

The amplifier

The third link in the chain of elements making up a recording system is the amplifier. Properly designed and built, the amplifier can meet, as well or better than any other element in the system, the requirements of uniform frequency response over a wide range; low harmonic distortion; and absence of noise. But when considerations of economy or portability enter into the design, noise and distortion are often introduced. The noise is usually a steady, low-pitched hum, which originates in the alternating current used to supply power to the system. In a good amplifier the hum is inaudible at operating levels. Harmonic distortion is introduced when the amplifier has to be operated near the maximum limit of its power output. A satisfactory amplifier has an abundance of reserve power, so that it is rarely necessary to call upon it for its maximum.

A *power-indicating device* is essential in an amplifier to be used for recording. The most convenient device is a meter, calibrated in suitable units, such as decibels. Less expensive indicators, such as the "magic-eye" tube, a neon light which flashes when the power rises above a certain level, are sometimes used.

[11] *Electronics*, December, 1939, p. 25.

In connection with the amplifier, certain electrical circuit arrangements, called *equalizers,* are often used to improve the frequency response characteristic of the system by compensating for deficiencies which may exist in certain other parts of the system. The proper design of equalizers calls for considerabl engineering skill, which may add a good deal to the cost of the apparatus.

The recording head

The fourth element in the recording system, the *recording head,* is likely to be the factor which limits the performance of the whole system in uniformity of frequency response and in freedom from nonlinearity, for it is here that the electrical oscillations from the amplifier are translated into mechanical vibrations of the stylus, which cuts the grooves in the record.

The properties of mechanical vibrating systems make it difficult to design the recording head so that it will be sufficiently rugged to cut grooves in the resistant material of the record and to withstand occasional rough handling, and, at the same time, sufficiently delicate to vibrate the cutting stylus back and forth without distortion, at frequencies from 100 to 10,000 times a second. The cutting heads used in professional recording on wax, which may cost several hundred dollars, are mechanical marvels, approaching the ideal in wide-range frequency response (to 10,000 c.p.s. and higher) and in freedom from nonlinearity. The low-priced units which are furnished with outfits for home and school recording are of much lower quality.

Inexpensive cutting heads are likely to have objectionable "peaks" (deviations from "flat" or uniform response) at one or more frequencies, due to resonances of the vibrating parts. Satisfactory uniformity of response can be obtained by the skillful use of equalizers, but the equally important freedom from nonlinear distortion cannot be achieved by such compensating devices. An intensity range of 60 decibels may be encountered in speech, but most of the inexpensive recording

heads become overloaded and nonlinear within a range of 25 or 30 decibels.[12]

When nonlinear distortion is slight, it appears in the reproduced sound as a "fuzzy" or "woolly" quality in tones which should be clean and clear. When it is severe, the reproduced speech is harsh and even unintelligible. When nonlinearity is present, wide-range frequency response may be a disadvantage, for the wider frequency range will include more of the audible products of distortion. It should be mentioned also that great width of frequency range is less important for pleasing results than uniformity of response over whatever range is reproduced, and that one broad, low peak is less objectionable to the ear than several narrower, sharper, higher peaks.

The stylus

The *stylus* is a small but important detail in the recording system. In recording on bare aluminum discs, a stylus with a rounded point of diamond, sapphire, or steel is used at a low angle, so that a groove is plowed or embossed, rather than cut, in the surface of the record. On coated discs, a stylus shaped like a tiny lathe cutting tool is used at a high angle (90 degrees) with the record surface, so that a "chip" or thread is cut out of the coating to form the groove. The most satisfactory material for the point of the cutting stylus is the sapphire, which is hard enough to take a keen edge and a high polish, and, consequently, produces a shiny, burnished groove. The shiny appearance is evidence of a smooth surface which will produce no noise in reproduction. Steel styli are less expensive, but they produce a less brilliant, gray cut, which gives rise to a hissing noise when the record is played, because of the roughness of the groove walls. Sapphire points, though very hard, are brittle and easily dam-

[12] *Data on Instantaneous Recording Machines*, compiled by the National Association of Educational Broadcasters, Urbana, Illinois, 1939. This report describes several tests and gives the results of their application to a number of commercial recording machines.

aged by careless use, such as dropping the stylus on the record or permitting it to cut through the coating into the metal base of the disc. When they are used carefully, they have a long life (several hours of recording), and they can be resharpened after they become dull. A hard alloy, called stellite, is also used for stylus points. Like the sapphire, stellite cuts a quiet groove and can be resharpened, but its useful life is shorter.

The angle of the stylus and the depth of the groove are highly important for quiet grooves and good quality in recording. Convenient means of making these two adjustments are desirable but not always to be found in the less expensive machines.

The recording disc

Considerable progress has been made in the choice and development of materials for instantaneous recording discs. Uncoated aluminum records are cheap and long-lived when played back with cactus or other fiber needles. But the granular structure of the metal produces surface noise of high intensity, and, consequently, the bare aluminum discs have been discarded for most recording purposes. The surface noise is lowered somewhat by the use of fiber needles. because they are not stiff enough to reproduce the high frequencies well. This suggests that, for some purposes, tolerable results may be attained by the use in the recording process of equalizers which overemphasize the high frequencies. Corresponding high-frequency losses may then be introduced into the reproducing system by using the fiber needles and adjusting the "tone control" so that the high-frequency emphasis is reduced to normal and the high-frequency surface noise is reduced to a relatively low level at the same time However, the somewhat more expensive coated discs will be found to give better quality and almost complete freedom from surface noise without resort to such methods.

The composition of the coating, the method of applying it to the base, and its subsequent treatment differ among the

present manufacturers of coated discs, all of whom claim advantages for their own products. The best discs have a homogeneous coating of uniform thickness and hardness, with a mirror-smooth surface free from bubbles, grit, dust, and swirls or flow-marks. The lacquer coatings, when cut with a sharp sapphire stylus, should give a brilliant, noiseless groove, greatly superior in surface noise to the pressed composition records which are manufactured commercially for home entertainment. The chip which is cut out of the surface should not be kinky or dull, but a straight and shining thread about the thickness of human hair. Since the lacquer is composed of cellulose nitrate (not "acetate"), it is dangerously inflammable and should be disposed of carefully.

The lacquer coated records for home and school use have two principal disadvantages. One is that the records tend to wear out rapidly unless they are played back with a lightweight reproducer and a suitably shaped reproducing needle. Ordinary phonograph needles are too sharp, tending to score and tear the bottom of the groove, and ordinary phonograph pickups are too heavy. The ordinary three-ounce pickup, with its weight concentrated on the point of the needle, produces a pressure on the record of the order of one ton per square inch. Fortunately, lighter reproducers are becoming available. Fiber needles should never be used on lacquer records, as their dull, unpolished points roughen the groove walls more quickly than the polished, rounded steel or sapphire needles.

The other disadvantage is the distortion which is caused by deformation of the grooves after the record is cut. In order to avoid the necessity for expensive and cumbersome suction devices, such as are used in professional wax-cutting recorders to dispose of the thread as it is cut from the record surface, the lacquer records are manufactured so as to produce a considerable surface tension on the coating. As the thread is cut, it is released from the surface tension and it shrinks. The shrinkage shortens the thread and causes it to lie toward the center of the turntable, out of the path

of the cutting stylus. This "throwing" of the thread is essential when there is no other way to prevent its becoming entangled about the cutting stylus, where it would interfere with the stylus motion. But the uncut portions of the surface between the grooves also tend to shrink as the thread is removed, and the result is a deformation of the waves which have been engraved in the surface. Lacquer records also have been known to develop distortion during the weeks or months after cutting, as the lacquer continues to shrink in drying and hardening.

The loud-speaker

The weakest link in any reproducing system is likely to be the loud-speaker, which translates the electrical oscillations from the output of the amplifier into mechanical oscillations of a diaphragm. As in the case of the cutting head, resonant peaks, nonlinearity, and lack of response at the very high frequencies are to be expected in all but the very best and most expensive loud-speakers. Extended high-frequency response is sometimes achieved by the use of an auxiliary loud-speaker especially designed for high-frequency vibration. Good low-frequency response cannot be expected of a loud-speaker enclosed in a small cabinet, or in the lid of a carrying case; but since the very low-frequency waves (below 100 c.p.s.) are of little importance in reproduced speech (see Fig. 33), such arrangements are often used for convenience and economy. Indeed, in many of the reproducing systems which are primarily intended for music, a "music-speech" switch is provided to *reduce* the low-frequency response for listening to speech. Low-frequency emphasis due to cabinet resonance, for example, which may be tolerable or even pleasant in reproduced music, causes reproduced speech to sound unnaturally "boomy," as if the speaker's head were in an empty barrel. The music-speech switch enables the listener to cut in a filter which attenuates the low-frequency vibrations and eliminates the boominess.

In reproducing systems of really high quality, such an arrangement is superfluous.

The turntable

The turntable and its driving mechanism may introduce noise and distortion either in recording or in reproducing. Variation in the speed of rotation of the record, either in recording or in reproducing it, causes variations in the frequency of the reproduced sound which are known as "wows." Vibrations which originate in the motor or in the driving mechanism may be communicated to the turntable and thence to the reproducer, and may appear as rumbling or growling noises in the reproduced sound. If the reproducing system is deficient in its response to low frequencies, the growl may not be objectionable. Wows are more noticeable to the ear in the sustained tones of music than they are in speech. Flywheels and other mechanical filters are used to guard against wows and vibration in turntables of high quality.

The conventional turntable speeds are 78 revolutions per minute for most records and 33⅓ r.p.m. for special long-playing records. Using the slower speed, fifteen minutes of uninterrupted music or speech can be recorded on each side of a 16-inch disc, but the quality of the recording is likely to be poorer at 33⅓ r.p.m. than at 78 r.p.m. The reason is simple. At the slower speed, the length of the waves engraved on the record is shorter. The waves of high frequencies become so short, in fact, that they are smaller than the tip of the reproducing needle, and, consequently, the needle cannot follow them or communicate them to the reproducer. This effect is increased in the grooves nearer the center of the disc, since the groove speed there is slower than at the outside of the disc. It is possible to compensate for this type of distortion to some extent by means of equalizing, so as to emphasize the high frequencies; but no grooves should be cut closer than three or four inches from the center of the record, in recording at 33⅓ r.p.m. It is for this

reason that recording at the slow speed is usually done only on the larger (12-inch and 16-inch) discs.

Over-all fidelity

And now a final word about the over-all characteristics of the entire recording and reproducing system. Although we have not mentioned all of the possible sources and kinds of distortion, our brief analysis shows that shortcomings may exist in a number of the elements of these complicated systems. (We have ignored the fact that listeners become tolerant of imperfections through habit and accommodation.) We have pointed out that in certain cases a lack of uniformity in frequency response in one part of the system may be corrected, when it is known, by suitable compensation in another part. Thus, for best results, the frequency response characteristic of the reproducing system should be matched to the frequency response characteristic of the recording system.

Two different types of uniform or constant frequency response, called *constant velocity* and *constant amplitude,* are now commonly used in recording. In the first the velocity of the stylus point is constant at all frequencies for an input of constant intensity to the cutting head. This means that in cutting 1000 waves in one second the stylus point travels just as far as it does in cutting 2000 waves in one second; hence, the amplitude of the 1000-cycle waves must be twice as great. Thus, in constant velocity recording, the amplitude of the waves engraved on the record is inversely proportional to the frequency. In constant amplitude recording, however, constant input to the recording head results in constant amplitude of the waves at all frequencies. The *constant velocity characteristic* is typical of electromagnetic cutting heads, and the *constant amplitude characteristic* is typical of crystal (piezoelectric) heads, although the performance of both kinds is usually altered in practice by equalization. The point to remember in this connection is that for the best

results the reproducing system should be designed to match the characteristic of the recording system.

In constant velocity recording, which is the more common of the two types, the amplitude of the waves at the low frequencies is purposely reduced in order to prevent overcutting, that is, cutting waves of such great amplitude that they would cut into the adjacent grooves. The reproducer to be used in playing the records which are so produced should be designed so that the low-frequency loss of the recording system will be compensated in the reproduction, and the over-all characteristic will be flat or uniform.

In professional recordings of the highest quality (those called "electrical transcriptions," which are used in broadcasting), the recording characteristic is neither flat nor simple, but the naturalness of their reproduction is startling in comparison with ordinary commercial records. The secret lies in the shrewdly engineered "pre-emphasis," or intentional distortion, in the recording process and the matched compensating characteristics of the reproducing system.

CHAPTER 18

Speech Correction

Since the days of Moses and Demosthenes, two of history's most illustrious speech defectives, the correction of speech defects has been a topic of considerable interest to those physicians, psychologists, and teachers whose work has brought them into contact with individuals handicapped by abnormalities of speech. Not until recently, however, has recognition of the magnitude and seriousness of the problems presented by these individuals led to intensive study of the field of speech pathology and to the rapid expansion of facilities for the treatment of speech defects.

Speech Defects as a Social Problem

On the basis of a survey conducted in 1930, the White House Conference on Child Health and Protection estimated that there were between one million and one and a half million children of school age in the United States whose speech was seriously defective. This estimate was based on questionnaire returns from 48 cities with populations over 10,000. A subcommittee of the Conference examined the school population of Madison, Wisconsin, and found that slightly over 7 per cent of the children had defects of speech. Other studies of elementary and secondary school children have resulted in percentages varying from 2.8 per cent (Wallin; St. Louis, Missouri, 1916) to 22.5 per cent (Blyton; Puyallup, Washington, 1938). Differences between the results of various surveys are probably due to differences in procedure, in the degree of severity of the defects included, and in methods of classification, and to the presence or absence of speech training and speech correction programs in the schools from which the students come. Even the most

conservative estimates indicate that the number of children in need of speech correction is large.

Effect on school progress

The exploitation of various speech defects, particularly stuttering, as sources of humor on the stage, radio, and screen has led to a disregard of the effects of defective speech on the individual who is afflicted. One who has never been so afflicted can seldom appreciate the full extent of the disability imposed by a speech defect. The speech defective is usually keenly aware of his inferiority in one of the most common and most important of all human activities. Every time he tries to express himself in conversation, his speech may make him a subject of amusement and ridicule. School progress, social adjustment and economic opportunities may be seriously affected by abnormalities of speech.

The use of the word "dumb" to signify both "unable to speak" and "deficient in intelligence" is an indication of the attitude frequently taken toward the speech defective. Unintelligible speech and refusal to recite because of embarrassment over a speech defect are not infrequently given as reasons for failure to promote a student whose work was otherwise satisfactory. While stutterers, for example, have been shown to be as intelligent as nonstutterers, a study made by Wallin in St. Louis indicated that, on the average, they were retarded more than a year in school. Occasionally, children of normal mentality are placed in classes for the mentally deficient for no reason other than a defect of speech. In one instance, a boy who was doing satisfactory work in his junior year in college narrowly escaped commitment to an institution because, in spite of his college record, his speech led the court to the conclusion that he was feebleminded. Recently, several Selective Service Boards, classifying men for military service, have considered defective speech to be *prima facie* evidence of mental deficiency.

Social consequences

In social situations, too, the speech defective finds his speech a handicap. This is most apparent during adolescence. The child who is particularly sensitive about his speech defect may attempt to avoid embarrassment by avoiding social situations altogether. He may attempt to compensate for his difficulty by some other form of achievement, as did the stutterer who became the leader of the neighborhood gang by reason of his superior daring in defying the law. In this way he obtained recognition by his playmates which his speech defect had made it difficult for him to attain in more desirable ways.

Economic consequences

The economic disadvantages of defective speech are obvious. In many professions the speech defective is at a distinct disadvantage. This is becoming increasingly true of teaching. Many school systems are setting up more or less rigid speech examinations of prospective candidates and are refusing to employ those whose speech is not satisfactory. In law and medicine, the speech defective finds it difficult to become established. Even in engineering, greater emphasis is being placed on speech because of its importance in many of the types of work which the modern engineer is called upon to do. In many fields of business, the employer is unwilling to consider an applicant whose speech is defective.

Growing recognition of the magnitude and seriousness of the problems resulting from speech defects had led to a widespread development of speech correction programs and of facilities for treatment and research. In some states, such as California, Wisconsin, and Missouri, the state departments of education have established speech correction programs on a state-wide basis. School systems located in urban communities are adding trained speech correction teachers to their staffs, and various methods are being devised to handle the problems of the rural schools. Training in speech correc-

tion is being required of an increasing number of elementary and high school teachers. Many colleges and universities have established clinics for treatment, training, and research.

Types of Defective Speech

Speech seems such a natural process that full appreciation of its complexity is difficult until one becomes aware of the variety of defects that may affect it. There are several ways in which speech defects may be classified. The simplest procedure is to classify them on the basis of the symptoms which are presented. On this basis, speech defects fall into one or more of four broad groups.

Defects of language

Under this heading are placed those cases in which there is a deficiency in the ability to understand or to use language. They may be subdivided into:

1. *Defects in the perception of spoken language.* This division includes cases in which the individual does not understand speech. This type of difficulty may be illustrated by the following case:

J.B., age 4, was referred to the clinic by the social agency to which the child had been sent by the juvenile court upon removal from the mother who had been found guilty of repeated cruel beatings. For some time after his placement in a foster home he was suspicious and fearful of every approach. When he became accustomed to his new surroundings, he proved to be a happy, friendly child, but he seemed to understand nothing that was said to him. He never responded when his name was called. It was necessary to touch him in order to gain his attention. Examination indicated that his hearing had been partially destroyed.

2. *Defects in the production of spoken language.* Under this heading are to be placed those cases in which the individual does not express himself coherently through speech. This type of difficulty may be illustrated by the following cases:

L.F., age 5, had not begun to talk until he was four years old. He had acquired a vocabulary of only eight or ten words. Most of his wants were expressed by grunts and pantomime. His case history indicated that he had been slow in sitting up, in cutting teeth, and in walking. An intelligence test resulted in an I.Q. of 43, showing that the child was seriously retarded mentally and had reached a mental age of only a little over two years.

R.E., age 3, had begun to talk at fifteen months. Her speech had developed normally until, at 2½, she suddenly stopped talking. Questioning of the mother revealed the fact that a baby boy had been born shortly before R.E. stopped talking. Apparently she had discovered that by not talking she got more of the attention to which she had been accustomed before the birth of the baby.

F.F., age 25, was thrown from a motorcycle and suffered severe head injuries. After recovery, while able to understand what was said to him, he was not able to express himself. Asked the meaning of the word "cow" he would say: "It's a – you know summit, no, summit. You know, like this (pantomime of milking a cow) to drink."

Defects of articulation

Under this heading are placed those cases in which the individual has difficulty in the formation and combination of speech sounds. These cases constitute the great majority of all defects of speech. The most important types are:

1. *Sluggish, labored speech.*

R.L., age 12, had suffered a birth injury which resulted in spastic paralysis. Speech was produced with very slow labored movements, accompanied by irregular breathing, excessive facial grimaces, and spasmodic movements of the head, shoulders, and arms.

2. *Sound substitutions and distortions.* These range from unintelligible "baby talk" to various forms of lisping.
3. *Dialect.*
4. *Cleft-palate speech.*

Defects of voice

Under this heading are to be placed cases in which the voice is abnormal. These may be subdivided into:

1. *Defects of pitch.* The pitch of the voice may be too high or too low for the speaker's age and sex. The pitch may be too monotonous or may fluctuate in an unpleasant manner.

2. *Defects of loudness.* The voice may be too weak to be easily heard, or it may be unpleasantly loud. The loudness may vary in an abnormal manner.

3. *Defects of quality.* The first group of defects of quality includes voices which are called breathy, husky, harsh, or hoarse. The second group includes cases of flat, throaty, muffled, or shrill voices. The third group includes voices with excessive or deficient nasal resonance and those with a "nasal twang."

Defects of rhythm

Under this heading are placed all cases in which the normal rhythm of speech is disturbed. The most common of these defects is stuttering.[1]

Distribution of Speech Defects

By far the largest number of speech defects fall under the heading of defects of articulation. The report of the White House Conference Committee, although returns are not tabulated under exactly the same categories used in the classification given here, indicates that approximately 73 per cent of all speech defects are articulatory; about 22 per cent are cases of stuttering; 4 per cent are disorders of voice; and only .003 per cent would be classified as defects of language. These percentages are based on speech defects recognized by teachers among school children. More thorough

[1] Speech pathologists use the terms stuttering and stammering as synonyms. In the original German, the term *stammeln* referred to defects of articulation, while the term *stöttern* referred to spasmodic disturbances of speech. In English, the term *stammering* came to refer to instances in which the speech was blocked or interrupted, as in "b---oy," while *stuttering* referred to instances of repetition, as in "b-b-b-b-boy." Both types are now considered symptoms of the same basic defect, and, consequently, the terms are used synonymously.

examination and the inclusion of individuals below and above school age would undoubtedly increase the proportion of voice and language defects.

Defects of articulation are most numerous in the primary grades in school and show a marked decrease from the first to the eighth grades. Figure 36 shows the results obtained

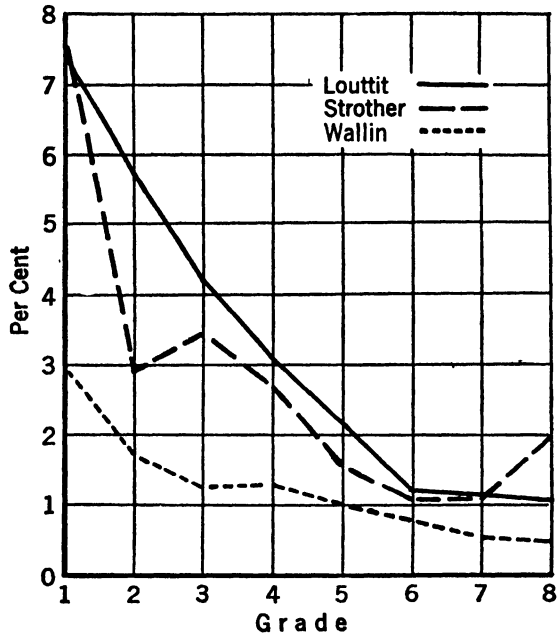

FIG. 36. INCIDENCE OF DEFECTS OF ARTICULATION BY GRADE. Louttit and Halls' Indiana survey, 1936, covered 199,839 pupils in Grades 1 to 12. Strother's Washington (State) survey, 1936, covered 18,082 pupils in Grades 1 to 12. Wallin's St. Louis, Missouri, survey, 1916, covered 89,057 pupils from Kindergarten to Grade 12.

in three studies of the frequency of defects of articulation according to school grade. This decrease is probably to be accounted for by the fact that a great many defects of articulation are due to poor habits of speech which are easily corrected when the child is brought into association with a number of other children in an environment in which he is given some incentive to acquire good speech. The distribu-

tion of stuttering in the various school grades is very different. Figure 37 shows this distribution. All of these studies indicate some tendency for stuttering to increase in the second or third grade and to remain relatively constant through the eighth grade.

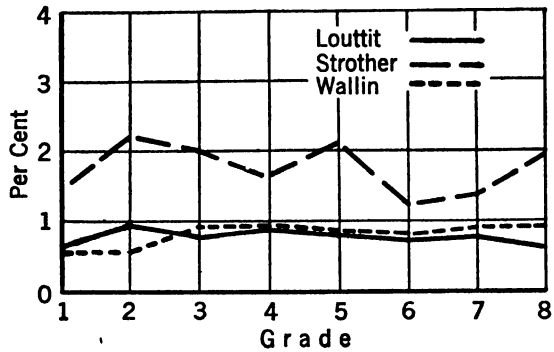

FIG. 37. INCIDENCE OF STUTTERING BY GRADE.

Causes of Speech Defects

Speech defects may result from a wide variety of causes. These causes may be divided into three groups: *physical, social,* and *psychological.*

Physical causes

From the physical standpoint, there are certain conditions of the organism which are essential to the production of normal speech. These conditions may be listed as follows:

1. A sensory apparatus capable of responding to the stimuli on which speech is dependent. Normally, a child learns to understand and produce speech through hearing speech. Without training, a child born deaf will not advance beyond the babbling stage in the acquisition of speech. A child who is hard-of-hearing may be able to learn some sounds but not others. His understanding of speech, his articulation, pronunciation, and voice may all be affected. An individual who becomes deaf or markedly hard-of-hearing after having

acquired speech will usually reveal a deterioration of voice and articulation.

2. A brain sufficiently developed and sufficiently intact to receive and correlate essential sensory stimuli, relate them to past experience, and organize appropriate language responses. Failure of the brain to develop adequately may prevent the acquisition of speech. The occurrence of a brain injury or brain disease may affect speech in a variety of ways. The individual so affected may become incapable of understanding speech, of controlling the articulatory movements involved in speech, of formulating his ideas coherently, or of finding the necessary words with which to express his meaning.

3. A respiratory mechanism capable of producing the sustained air pressure required for tone production. Inadequate lung capacity or inability to control the respiratory musculature, as in cases of spastic paralysis, may result in defects of loudness or rhythm.

4. A larynx, pharynx, mouth, and nose whose structures are sufficiently normal to permit the adjustments necessary for the production of satisfactory tones and their modulation into the sounds of speech. The larynx and pharynx are responsible for the production and modulation of tone. Abnormalities of the mouth, including the hard and soft palates, the tongue, gums, teeth, jaws, and lips, may be responsible for defects of articulation. Abnormalities of the palates, as in the cleft palate, may also affect the quality of the voice. Nasal abnormalities cause the various defects of quality listed under the heading "nasality." If the nasal passages are completely closed, the articulation of the nasal sounds will be affected—changing the *m* to *b*, the *n* to *d*, and the *ng* [ŋ] to *g*, resulting in the type of speech characteristic of one with a bad cold: "By head is goig roud ad roud." Abnormalities of the pharynx may be responsible for defects of quality, as in the case of individuals whose voices are flat, shrill, throaty, or muffled; or for defects of loudness, as in the case of one whose voice lacks resonance. Abnormalities of

the larynx may be responsible for defects of pitch, as in the case of boys whose voices remain high because the larynx failed to undergo the growth that normally occurs during adolescence; for defects of loudness, as in the case of one who is unable to speak above a whisper because of a cold; or for defects of quality, as in the case of one whose voice is hoarse from shouting.

It should be pointed out here that the correlation between structural abnormalities and defective speech is not perfect. Relatively gross structural abnormalities may exist without materially affecting speech, while relatively slight structural defects may seriously affect speech.

5. Endocrine and autonomic systems capable of maintaining a normally functioning and normally developing organism. Thyroid deficiency resulting in a condition known as "cretinism" will result in abnormalities of speech. An overactive thyroid, on the other hand, will often affect the individual to such an extent that his speech will reflect his physical condition. There are various other endocrine and autonomic disorders which may result in defects of speech.

Social causes

The second major group of causes consists of social factors. Since speech is a social function which would never develop in the absence of a social environment, it is directly affected by the nature of that environment. It is essential that the child be provided with an opportunity to learn good speech. The speech a child uses is not inherited; it is learned from those whose speech he hears. If his parents use baby talk, if his older brothers and sisters and his playmates have speech which is defective, if he has the misfortune to have teachers who lisp or who have unpleasant qualities of voice, he may learn to speak in the same way. The social environment must not only provide adequate speech models, it must also provide the child with adequate incentive to learn speech. Anticipation of the child's wants so that he has no need to learn speech with which to express them is one of

the most frequent causes of speech retardation. A social environment conducive to emotional instability may be responsible for the development of abnormalities of speech. An increasing amount of emphasis is being placed on unfavorable environmental conditions as a cause of stuttering.

Psychological causes

The third group of causes includes those which may be termed psychological. Although, in the final analysis, many of these may be found to be physical or social in origin, it is convenient and useful to group them in a separate category. The most numerous of these causes is the acquisition of habits of incorrect speech. Where the child, through imitation or encouragement, has developed and retained defects of speech, the defects may be said to be primarily social in origin. A great many defects of articulation, however, develop simply as habits, not originating in imitation and not encouraged but persisting because they have been learned through repeated use. Knight Dunlap, a psychologist, goes so far as to suggest that in many cases stuttering is merely a habit. While most speech pathologists would hesitate to go this far, it is generally recognized that many habit factors are involved in chronic stuttering. Another important psychological cause of disorders of speech is emotional maladjustment. Speech is an exceedingly delicate barometer, quickly sensitive to the psychological state of the individual. Disturbances of speech are often merely symptoms of an underlying psychological disturbance. Traits, such as aggressiveness or lack of self-confidence, and emotional states, such as excitement or depression, may be reflected in temporary or permanent characteristics of speech and voice. Occasionally a single highly emotional incident may give rise to an abnormality of speech which will then persist because of other factors. The following case is an illustration of this:

G.M., age 4, was sent by her mother to warn her brother and sister not to play on the ice. Instead, she became interested in the game and started to play. The ice broke and her brother

and sister were thrown into the water. She ran for help but was so excited and fearful of the consequences of having disobeyed her mother's instructions that she stuttered severely when she tried to tell what had happened. The emotional state resulting from her brother's drowning and her family's solicitude about her speech resulted in the development of a severe chronic stutter.

There are many other abnormalities of speech which may result from abnormal psychological conditions. Neurotic lisping, hysterical mutism, and the incoherent speech of the insane are illustrative of these.

Analysis of the causes

As may be judged from the number and complexity of the conditions which cause defects of speech, the diagnosis of a given defect is often a complicated and difficult task. The ability to make a valid diagnosis demands considerable background and training. The speech pathologist must be thoroughly familiar with experimental and applied phonetics so that he can analyze defective speech sounds, and describe them accurately. He must be familiar with the structure and movements of the normal speech mechanism and with the effects of various abnormalities of structure and movement on the voice and articulation. He must understand the relationship between hearing and speech and be able to determine the extent to which a hearing disability may be responsible for a given abnormality of speech. He must know enough about neurology to know how the speech organs are innervated and how the speech movements are initiated and coordinated. He must know the way in which speech develops and the various factors which may retard or disturb that development. He should be able to evaluate the intelligence of an individual and to recognize and analyze the symptoms of emotional maladjustment which may be related to the speech disorder. Some of the procedures and techniques utilized by the speech pathologist in diagnosis are illustrated in the following chapter on the Speech Clinic.

Correction of Speech Defects

The procedures to be used in the correction of a given defect of speech depend, of course, on the nature and causes of the defect.

Organic defects

In the case of abnormalities of speech due to organic factors, improvement will be dependent upon the removal or amelioration of the organic condition or upon the extent to which the speech therapist may succeed in teaching the individual to compensate for the organic abnormality.

If, for example, a child's speech is retarded because of a thyroid deficiency, resulting in a type of mental and physical retardation known as "cretinism," satisfactory speech can be developed only if medical treatment by the physician results in satisfactory physical and mental development. In cases in which it has been necessary to remove the larynx because of cancer, speech may be developed by teaching the patient to swallow air and to use this air in producing tone, somewhat as one may do involuntarily in belching.

The speech defect of the cleft-palate child is due to his inability to prevent the escape of air through the nose because the palate, which separates the nose from the mouth, is split. If the surgeon or dental specialist can provide the child with a satisfactory palate, then the speech therapist can teach him how to use the palate in the production of better speech. This is done by palate exercises and a type of speech training designed to develop the individual's ability to raise the soft palate, close the opening leading from the throat to the nose, and direct a stronger stream of air through the mouth.

Difficulty in understanding or producing speech due to an irremediable hearing disability may be compensated for by the use of a hearing aid, by lip reading, and by learning the production of correct speech sounds through avenues other than hearing. The spastic child must be taught to relax and control the movements of the speech organs in much the

same way that he learns from the physiotherapist how to relax and control the legs in walking. The successful management of organic defects of speech requires close cooperation between the speech therapist and the medical and dental specialists concerned in the treatment of the organic condition. Where the organic abnormality cannot be corrected, the speech therapist must apply his understanding of the organic condition, and his patience and ingenuity in teaching the individual to overcome the organic limitations insofar as is possible.

Defects due to social factors

In correcting speech defects which are due primarily to social factors, the undesirable conditions in the child's environment must be modified. A thorough investigation must be made of the home situation, of the neighborhood environments, of the child's play relationships and school adjustments. The investigator is concerned with a number of specific questions. He wants to know, first, what incentive the child has had to develop speech. If the child has had no real need for speech, the parents must be taught not to satisfy the child's wants so readily unless he attempts to use speech to express them. A child may derive some advantage from an abnormality of speech, as in the case of the child cited earlier in this chapter who, by not talking, ensured herself of more attention from her mother. Occasionally a child is actually encouraged to develop defective speech. Baby talk and lisping may be considered "cute" and the child may use them until they become habitual. In such cases, the parents—and, not infrequently, the grandparents —need training more than the child does.

The investigator wants to know what opportunities the child has had to learn speech. If his parents have spent little time with him and he has not had much contact with other children, his speech retardation may be due to lack of adequate opportunity to hear speech. In this case an attempt must be made to enrich his speech environment.

On the other hand, if he has associated with individuals whose speech is poor, he may have learned defective speech from them. The following case is an excellent example of this:

L.G. and R.G., twins, age 6, were brought to the clinic because their speech was so unintelligible that they had been refused admission to the first grade. On examination, it developed that they lived on a farm and had had no children to play with other than a feeble-minded older brother. Their speech was so much like his that it was apparent that association with him had been responsible for their defects of articulation. When they were placed in kindergarten where they associated with other children whose speech was good, most of their sound substitutions disappeared, and a little systematic training by the first grade teacher the following year eliminated the rest.

Situations involving persistent emotional tension are often conducive to speech defects.

L.S., age 10, stuttered. He was an orphan for whom a social agency was trying to find a foster home. Due to circumstances for which he was not responsible, it had been necessary to remove him from three foster homes in a period of two years. Each time that his removal from a home was impending, his stuttering became severe. This condition persisted until he was settled in a new home, whereupon his speech improved. When he was finally placed in a home which he liked, his speech improved greatly and the stuttering readily yielded to treatment.

Recent research on stuttering has revealed that a great many children go through a stage in the development of speech during which they hesitate and repeat. If these hesitations and repetitions are called to the child's attention and he is made self-conscious about them, they are very likely to develop into stuttering. If the attitude of the child's parents and associates toward his speech can be changed before the child develops stuttering habits and comes to consider himself a stutterer, the stuttering will frequently disappear.

Still another important environmental situation contributing to the development of defective speech is the class-

room. If the child is brought into daily contact with a teacher whose speech is defective, he may imitate her defect. If he is required to speak or read before the class under emotionally disturbing circumstances, his speech may reflect his disturbance, and real difficulty in speaking before a group may develop which will later affect his speech under other circumstances. This may be one reason for the apparent increase in stuttering in the second or third grade.

There are, then, a great many ways in which the social environment may be responsible for defects of speech. These defects may be prevented by providing the right sort of environment for the child, or they may be corrected, if taken early enough, by modifying or eliminating the factors in the environment responsible for their development. It must be remembered that after a child has had a given defect for a period of time that defect tends to become a habit. Then elimination of the undesirable features of the environment is not sufficient to remedy the difficulty. The habit factors must also be dealt with.

Defects due to psychological factors

This leads to consideration of the procedures used in the correction of defects which are due to causes that have been termed psychological. The most important of these defects, and also the most numerous, are those which can be considered merely bad habits of speech. The majority of cases of lisping fall in this category. The substitution of the voiceless *th* [θ] sound for the *s* [s] sound may serve as an illustration. An individual with such a defect will say *mith* [mɪθ] for *miss* [mɪs]; *the* [θi] for *see* [si]; *thaw* [θɔ:] for *saw* [sɔ:]. The defect may have been due originally to imitation, early loss of upper front milk teeth, or other causes. Once it has become habitual, however, the problem involved in correction is how to substitute the correct habit for the incorrect. The procedures used have been outlined most adequately by Van Riper and Koepp-Baker (see Bibliography).

The individual must first be taught to recognize the dif-

ference between the incorrect sound which he is using and the correct sound. There are several ways in which this may be done. The speech teacher may produce the correct and incorrect sounds repeatedly until the difference is recognized. This is called the "auditory stimulus method" because the individual is taught to *hear* the difference between the two sounds. The "visual method" stresses the difference in *appearance* of the two sounds. A child who lisps may be shown, for example, that the tongue can be seen between the teeth on the *th* [θ] sound, but stays hidden behind the teeth on the *s* [s] sound. The "tactile-kinaesthetic method" places the emphasis on the *feeling* of the sound. In teaching the difference between the *f* [f] sound and the *th* [θ] sound by this method, the child learns that to produce the former he bites his lip, while to produce the latter he bites his tongue. The auditory method is probably the most frequently used, but there are many cases in which one of the other methods, or a combination of methods, is necessary.

The second step is to teach the individual how to produce the correct sound. The auditory, visual, and tactile-kinaesthetic methods are used until he is able to produce the correct sound at will.

Teaching him to produce the sound correctly in words is the next step. This is frequently the most difficult part of the process because the sequence of sounds which he has been accustomed to use for the given word is usually a firmly established habit. Even after a child has learned to make a good *th* [θ] sound, the word *thin* [θɪn] continues to be pronounced *fin* [fɪn]. The old sound must be replaced by the new. One way in which this can be done is to break the familiar word pattern into parts which, at first, are merely nonsense syllables, as *th–in* [θ–ɪn]. The interval between the syllables is made shorter until the sounds are finally combined into the new pattern *thin*. Sufficient practice is then given to establish the new habit and ensure the child's carrying it over into spontaneous conversation. The whole

process is more difficult than it may appear to be. Successful retraining of a defect of articulation requires a thorough knowledge of phonetics, accurate diagnosis of the nature and cause of the defect, skill in finding the most effective procedure for the particular individual, ingenuity in devising ways of making the drill interesting, and willingness to persevere until the correct sounds have become completely habitual.

In many instances, a speech defect is merely a symptom of an underlying emotional problem. Speech training alone is of little effect in such cases. The causes of the emotional maladjustment must be understood and dealt with. If these causes are due to undesirable and modifiable factors in the environment, treatment is directed to modification of these environmental factors. We have classified such cases as primarily social rather than psychological. If, however, the causes of an individual's maladjustment lie within himself rather than in his environment and if the principal objective of treatment is to modify the individual's interpretation of and reaction to his environment, the treatment involved is psychological rather than social. The following cases fall in this category and will serve to illustrate some of the procedures used:

R.T., age 4, was referred to the clinic for advice concerning stuttering which had developed recently. There was no previous history of stuttering in the family, the child had always been in excellent health, his physical development was normal, and the home environment appeared to be very satisfactory. The parents had shown an unusually sensible attitude toward the stuttering by completely ignoring it. A clue to the possible cause of the difficulty was obtained by observation of the child's play over a period of time. A frequently repeated game involved his packing a toy suitcase, kissing his mother good-bye, and pretending to leave on a trip. The important part of the game appeared to be the repeated assurances given his mother that he would be sure to come home again. Questioning revealed that the child had misbehaved one morning just as his father was about to leave on a business trip. The father had threatened not to come home

unless the child promised to be good while he was away. The child apparently had taken this threat very seriously and had been much disturbed by it. Removal of this fear resulted in disappearance of the stuttering. (It should be pointed out that, had the stuttering been allowed to persist until it had become habitual and the child had begun to develop emotional reactions toward his speech, merely removing the precipitating factor would not have been sufficient.)

J.F., age 21, was referred to the clinic by the supervisor of switchboard operators at a branch exchange of a telephone company. The girl had been employed after the recent death of her father, who had worked for the company for years. She had been in training for service as an operator but was unable to speak in such a way that she could be heard and understood over the telephone. Her difficulty arose principally from a lack of self-confidence. Psychological treatment was resorted to in order to remove her feeling of inferiority and to improve her poise and self-assurance. Speech training was used to increase her confidence in her voice and speech. She improved sufficiently to obtain and hold a job as a regular operator.

In many cases the presence of a speech defect may result in the development of psychological problems. Speech defects are, unfortunately, so often the subject of amusement or ridicule that it is difficult for an individual so handicapped to avoid feeling embarrassed and inferior. The resulting tendency to withdraw from social situations or to attempt to compensate for the difficulty in some way may seriously affect the individual's personality and social adjustment. These effects may ultimately prove to be more of a handicap than the speech defect. This is, perhaps, particularly true in cases of stuttering. Some stutterers with a very severe speech difficulty participate quite normally in all situations in spite of their speech defect, while others whose difficulty is so slight as to be hardly noticeable are greatly affected by it. In these cases the individual must be taught to evaluate his difficulty more objectively. Mental hygiene procedures must be used to bring about a change in attitude and to develop a more healthy emotional and social adjustment.

Prevention of Speech Defects

Speech defects which have been allowed to develop until they have become firmly established habits and have seriously affected the personality and social adjustment of the individual usually require prolonged and intensive treatment at the hands of a trained speech therapist. Fortunately, the great majority of defects can be prevented or corrected with relative ease if they are dealt with soon enough.

Responsibility of the home

An adequate program of prevention would need to reach into the home and teach parents certain simple, fundamental principles of early speech training. The first principle is that *a child must have some incentive to learn speech.* After he has reached the age at which he can be expected to begin to talk—between nine and fifteen months—he should be encouraged to associate sounds with the objects, needs, and experiences that occur repeatedly in the course of his daily life. His wants should not be satisfied so readily that he has no need to express them in speech. His attempts to use speech should meet with approval and praise.

The second of these principles is that *a child learns what he hears.* If he is to be expected to speak clearly, he must have adequate opportunity to hear good speech and little or no opportunity to hear baby talk, or slovenly or excessively rapid speech.

The third principle is that speech is, at best, difficult to learn, and *a child should not be expected to acquire it too rapidly or too soon.* Recent research has indicated that a considerable number of children go through a stage in the development of speech during which they speak with numerous repetitions and hesitations. If they are made conscious of them by the parents' expression of concern, by instructions to avoid them by speaking in certain ways, or by teasing and ridicule, these normal repetitions and hesitations may easily develop into stuttering.

The fourth principle is that, since speech involves highly complex coordinations, *it is easily affected by physical or emotional disturbances.* The child should, therefore, be kept as free from these as possible. If they do develop and if it is beyond the ability of the parent to cope with them, the advice and assistance of a physician, psychologist, or psychiatrist, should be sought.

Responsibility of the school

Because parents are so frequently ignorant of these principles or are unable or unwilling to apply them, the chief responsibility for the prevention and correction of speech defects must rest on the schools. Teachers in the kindergartens and primary grades must not only be free from defects of speech and voice themselves but they must be able to provide the right type of speech training for all the children in their grades. They must be able to correct minor defects of speech and to recognize the major disorders which require treatment by a trained speech therapist. The more serious types of speech defect and the cases of older children requiring intensive, systematic training must be handled by someone with specialized training in speech correction. This work is usually done in small groups of from three to ten children, with supplementary individual work in cases where this is necessary. In most places where speech correction work is now going on, the speech correction teacher has responsibility for all the schools in a certain district and travels from school to school.

In colleges and universities, responsibility for speech correction is usually delegated to a speech clinic. The correction of speech defects in individuals who have reached college age is a highly specialized task which usually requires individual clinical treatment.

CHAPTER 19

The Speech Clinic

The university speech clinic is a comparatively recent development. Although the first speech clinic was established in the University of Wisconsin in 1914, Dr. Anderson of Stanford University reports that approximately 50 per cent of the clinics included in a survey made by him in 1938 had been established since 1933. This growth may be attributed to three factors. The first of these factors is recognition of the need for corrective speech training for college and university students. An increasing number of institutions are requiring speech examinations on college entrance or on admission to special departments, particularly the department of education. These examinations have revealed that a surprising number of college students have speech defects. An examination of members of the freshman class at the University of Wisconsin, made by Dr. Blanton in 1921, indicated that 18 per cent had defective speech. According to figures reported by Dr. Kleinfeld, over a period of six years (1931-1936), 29.7 per cent of all freshmen entering the College of the City of New York were treated in the speech clinic for defects of speech. Dr. Steer reports that 22.5 per cent of the male students entering Purdue University in 1935 were referred to the speech clinic for treatment.[1]

A second factor accounting for the growth of the college speech clinic has been the development of speech correction in public and private schools, in hospitals and private clinics, which has led to an increasing demand for students trained in this work.

[1] The magnitude of these figures in comparison with the incidence of defects among elementary and secondary school students given in the preceding chapter is due to the application of more rigid criteria in the examination of college students.

A third factor has been the growth of interest in research in the field of speech pathology, which has necessitated the operation of speech clinics to provide data and cases for research workers.

Organization and Functions of the Speech Clinic

The same factors that have been responsible for the development of the college speech clinic have determined its functions and, to a certain extent at least, its organization.

Functions of the clinic

Speaking generally, college clinics have three functions: service, that is, the diagnosis and treatment of disorders of speech; training of speech pathologists and speech therapists; and research in speech pathology and speech correction. The nature of the institution in which the clinic is located determines the relative emphasis to be placed on these functions. In some clinics the major emphasis is on service; others are interested primarily in training or research.

Organization of the clinic

University speech clinics are organized in several ways. At the University of Wichita, the clinic functions as a separate institute, the Institute of Logopaedics. At the University of Michigan, it is a division of the Institute of Human Adjustment. At the University of Iowa, it is a joint project of the departments of speech, psychology, and child welfare. Most frequently it is a division of a department of speech, as at Stanford, Washington, Minnesota, Wisconsin, Pennsylvania State, and many other institutions.

The work of the speech clinic is usually organized into two divisions: an out-patient division, which is concerned primarily with diagnosis, and an in-patient division, which is concerned with treatment. Cases—both students in the institution and outsiders—are received in the out-patient divi-

sion. The individual is examined and a diagnosis is made. The case may then be accepted for treatment in the clinic or referred elsewhere for treatment, or instructions may be given to the parent or teacher for treatment at home or at school.

The Diagnosis of Speech Defects

Because speech defects may result from a wide variety of causes, the problems involved in diagnosis are frequently complex.[2]

The speech examination

The first step required is to obtain a thorough and detailed description of the individual's speech. This is done by careful examination of his understanding and use of language, by observation of the pitch, quality, and loudness of his voice in various speaking situations, of the rate and rhythm of his speech, of the correctness of his pronunciation and the clarity of his articulation. Observation of his speech and voice is followed by a special examination of the factors found to be defective. In the case of a defect of articulation, for example, this special examination consists of a thorough phonetic test in which the individual's production of each of the speech sounds is carefully checked. In the case of a stutterer, it involves a description of his spasm pattern—that is, how he stutters, the frequency and severity of his stuttering, the variation in the amount of stuttering from time to time and from situation to situation, and the stutterer's apparent and expressed reactions to his speech and to speaking situations.

Case history

When a complete description of the individual's speech has been obtained, the examiner is in a position to determine

[2] The following outline of diagnosis is not intended to be exhaustive. Certain procedures have been selected merely to illustrate the processes which may be involved.

what further examinations may be needed in order to establish the cause of the difficulty. A general case history is obtained which usually includes a history of the birth and physical development, a description of the family and of the home and outside environments in which the child developed, a statement of his school record, his social and emotional adjustment, and the history of his speech defect.

Intelligence testing

Intelligence tests may be required to determine the extent to which mental deficiency may have contributed to defective speech. This is particularly necessary in cases of speech retardation, of severe defects of articulation in young children, and in cases of abnormal development or birth injury. Selection and evaluation of the intelligence tests to be used must take into consideration the effect of speech and physical handicaps present in the given case.

Examination of speech mechanism

The diagnosis of defects of articulation and of some other defects may necessitate an examination of the speech mechanism, including the lips, jaws, teeth, gums, hard and soft palates, nasal passages, throat, larynx, and the mechanism of respiration. The relationship of these structures to various defects of speech was discussed in the preceding chapter.

Tests of hearing

Hearing tests are frequently required to determine the presence or absence of a hearing loss, the nature and extent of such a loss, and its effect on the individual's ability to understand speech. The existence, nature, and extent of a hearing loss is determined by administration of an audiometer test. An audiometer is an instrument which enables the examiner to produce at different levels of loudness any one of a series of tones varying in pitch from low to high. If the individual being tested is not able to hear a sound of a given pitch unless it is louder than the level at which the

normal ear can hear the tone, he is said to have a hearing loss of a certain amount for tones of that pitch. The relationship of hearing losses to speech has been discussed in the chapter on Speech and Hearing. The effect of a hearing loss on ability to discriminate between sounds may be measured by a speech-sound discrimination test, in which pairs of sounds or of words are presented and the individual is asked to determine whether the sounds or the words in each pair are alike or different. Lists of words or sentences are read to him, and he is required to repeat or write them down. The efficiency of his hearing of speech under the circumstances of the examination is measured by the percentage of words or sentences he repeats correctly.

Other tests

The emotional adjustment of the individual may be an important factor, concerning which information is essential. The presence or absence of various symptoms of maladjustment may be determined by questioning parents, teachers, and associates; by observation of the individual's behavior in specific situations; or by the use of various personality tests and rating scales.

There are many other special tests of pitch discrimination, motor coordination, breath control, laterality, aphasia, and so forth, which may be required. These are too numerous to discuss here, but they must be familiar to the speech pathologist and available for use in cases which require them.

Illustrative cases

The use of procedures involved in diagnosis may be illustrated by following a number of representative cases through the clinic.

T.A., age 6, was referred to the clinic by her first grade teacher, who complained that the child's speech was unintelligible. The first step involved in the diagnosis of her difficulty was to get an accurate description of her speech. When the examiner played with her and talked to her, she responded readily, chattering

freely in a normal voice and with normal patterns of inflection and rhythm, but few words could be understood. The examiner then wished to determine what sounds she could and could not produce, so he showed the child a series of picture cards and asked her to name the object shown on each picture. The pictures had been so selected that the names included all of the various sounds of speech in each of the three positions—initial, medial, and final—in which the sound occurs in English. A careful record was made of each sound the child produced. An analysis of this record showed that the child was making all the vowel and diphthong sounds correctly, as well as the following consonants: *p, b, m, n, t, d, f, v, w.* She was not making the following sounds: *th* [θ], voiced *th* [ð], *s, z, sh, r, l, y* [j], *k, g,* and *ng* [ŋ]. Analyzing these sounds on the basis of the movement required for their production it is seen that two of them—the *th* sounds [θ and ð]—require placing the tongue against the edges of the upper front teeth. Two of them—the *s* and *z*—require grooving the tongue. Two—the *r* and *l*—require lifting the tip of the tongue. One—the *y* [j] sound—requires lifting the middle of the tongue, and the other three—*k, g,* and *ng* [ŋ]—require lifting the back of the tongue.

Consequently, an examination was made of the child's mouth, particularly the tongue, to determine whether there were any organic abnormalities which would make these sounds difficult or impossible. None being found, her hearing and her ability to discriminate between sounds were tested and found normal. Intelligence tests were administered and showed average intelligence. Information obtained from her mother indicated that her physical development had been normal, that she was an only child, who had no playmates until she entered school, and that her parents had encouraged her "baby talk."

The case was diagnosed as "infantile speech due to an inadequate speech environment." The parent's attitude toward her speech was discussed with them. The procedures to be used in improvement of her speech were outlined and discussed with the parents and with the teacher. A recommendation was made that she be given as much opportunity as possible for association with other children. The mother was asked to bring the child in at the end of the school year for re-examination.

V.L., age 18, was referred to the clinic by her speech instructor because her voice was exceedingly monotonous and had not shown any improvement under regular class instruction. Observation of her voice during reading and speech corroborated her

instructor's opinion of its monotony. An examination of her hearing and pitch discrimination revealed no abnormality. When urged, she was able, without difficulty, to produce tones over a normal pitch range in a voice of good quality. Her general listlessness and lack of interest in addition to her monotonous voice suggested the possibility that her vocal difficulty was emotional in origin. A personality test—the Bernreuter Personality Inventory—verified this opinion. Further psychological examination made it seem advisable that she be referred to the college psychiatrist. She was found to be in the early stages of a mental disorder, was removed from school, and was ultimately placed in an institution under psychiatric treatment.

T.J., age 20, was referred to the clinic by his speech instructor because of a bad *s* lisp. Observation of his speech demonstrated that all of his *s* and *z* sounds were defective. The first possibility investigated was that he might have a slight hearing loss. A hearing test ruled out this possibility. His ability to discriminate between sounds was determined by the examiner's speaking several pairs of sounds, such as *s – s, s – sh, s – th, s – s, s – f,* and asking him to tell whether the sounds in each pair were alike or different. His ability to discriminate between sounds was apparently satisfactory. An examination was then made of his ability to lift and groove the tip of the tongue, of the alignment of his jaw and upper front teeth, and of the formation of the gum behind these teeth. These particular structures were examined because they are all involved in the formation of the sound with which he was having difficulty. This examination revealed a badly designed dental bridge which had been inserted to replace three upper teeth lost in a football game. The bridge was so constructed that production of a correct *s* sound was impossible. He was referred to the dentist for a modification of the bridge. On subsequent re-examination in the clinic, his speech was found to be satisfactory.

K.W., age 4, was brought to the clinic by his mother, who was concerned about a recently developed tendency to stutter. The mother reported that K. had repeated syllables and words for several months but that she had paid no attention to this until two or three weeks previous when he seemed to become worse, having occasional blocks when he seemed unable to get any sound out. She felt that he was becoming conscious of difficulty in speech. Examination of the child's speech revealed that his "blocks" occurred infrequently but were accompanied by bodily tensions and other reactions more or less characteristic of stuttering in

its early stages. The child's physical development had been normal and his health had been consistently good. There had been no behavior problems until recently when K. had been rude to his grandmother, had been disobedient, and had had one or two temper tantrums. These facts pointed to an emotional disturbance of recent origin.

A careful investigation of the home situation resulted in the information that the child's maternal grandmother had been living with the family for two months. There had been a great deal of friction between the grandmother and the child's father. The grandmother was nervous and impatient and had been critical of the child's hesitant speech. The obvious conclusion to be drawn from these facts was that the grandmother was probably the source of the child's difficulty. The recommendation was made that other living arrangements be provided for the grandmother and that the parents allow no attention to be paid to the child's speech. Reports received from the child's parents showed steady improvement, and a year later the difficulty had completely disappeared.

F.J., age 5, was referred to the clinic by the surgeon who had just completed repair of his cleft lip and palate. Routine psychological and hearing tests showed average intelligence and normal hearing. The speech examination revealed the weak plosive and fricative sounds and excessive nasality that are characteristic of cleft palate speech. An examination of the child's mouth showed that the surgical treatment had resulted in a flexible lip and an adequate soft palate. The child, however, was not using the soft palate effectively in speech. The mother was instructed in the use of exercises designed to develop the activity of the soft palate. Re-examination of the child six months later showed considerable improvement and more advanced exercises were provided. At the end of a year, the child was admitted to the clinic for intensive speech training, which was later continued by a speech correction teacher in the public school in which the child was enrolled.

The foregoing cases represent a fairly typical sample of the cases seen in a college clinic. The proportion of college students seen is, however, much higher than indicated in this selection of cases. On the average, about 85 per cent of the clinic time is spent on members of the student body. The student cases come from a number of sources: speech

entrance examinations, speech classes, faculty advisors, instructors, and college personnel officers. In a great many instances students come to the clinic on their own initiative.

Clinic Services for the Community

Several university clinics extend their services to communities throughout the area in which they are located by means of a traveling clinic which moves into a given community for a period of from one to three days. Pennsylvania State College was one of the first to engage in this type of work, while Indiana and the State University of Washington maintain two of the most extensive traveling clinic programs. At the latter institution, for example, the traveling clinic is under the sponsorship of the State Department of Education, which has established a number of regional centers throughout the state which are visited by the clinic. Sometime in advance of the date set for the clinic, teachers in the area to be served by the given center report the names of children with speech defects, together with a brief description of the nature of the child's difficulty and his school record. The cases to be examined are selected, and the children, accompanied by their parents and teacher, report to the center on the appointed day. There they are examined; their cases are diagnosed; and instructions as to treatment are given and demonstrated to the parents and teachers. Through traveling clinics of this nature, universities and colleges are rendering a valuable service to the public and are providing, at the same time, excellent training for the advanced students who form the traveling clinic staff.

Treatment of Speech Defects in the College Clinic

The in-patient division of the speech clinic is ordinarily concerned both with the treatment of speech defects and with the training of students in speech pathology and speech correction. The majority of cases treated are students in the institution in which the clinic is located. This fact makes

a great deal of individual work necessary because speech habits are firmly established in a person of college age and are not easily modified by the group methods of treatment that may be used effectively in work with younger children. In the case of severe defects of speech, particularly stuttering, the existence of the defect over a considerable period of time is quite likely to have had an effect on the personality, social behavior, and emotional adjustment of the individual. These effects are frequently more of a handicap to the individual than is the speech defect itself. Some stutterers, for instance, who stutter very little are nevertheless very seriously handicapped because of their self-conscious reaction to their speech and a consequent avoidance of social situations. On the other hand, some severe stutterers are much less handicapped because they have developed an objective attitude and have not allowed their speech to affect their social adjustment. As pointed out previously, these psychological effects of the speech disorder constitute additional problems with which the treatment must deal if it is to be effective. They are often more difficult to correct than the speech defect itself.

Functional defects of articulation

For purposes of convenience, cases accepted for treatment are usually classified in several groups according to the nature of the problem presented and the type of treatment required. Usually the largest group consists of college students with nonorganic defects of articulation. The steps involved in the treatment of this type of difficulty were outlined in the preceding chapter. The individual reports to the clinic for at least two periods a week over as long a period of time as may be required to correct the difficulty. Part, or all, of the clinical work may be done by a student under the direction of an experienced clinician. If there are a number of cases of foreign dialect, these may be placed together for group work on English phonetics, with additional individual attention on the problems peculiar to their

particular dialects. Young children with defects of articulation are usually handled in groups which can be used for demonstration and practice teaching by students who are in training for public school speech correction work.

Defects of voice

Voice defects often form the next largest group of cases. Unless they involve emotional or organic factors requiring special treatment, intensive individual and group training along the lines indicated in Chapter 9 on "Voice Improvement" is used. If emotional factors are involved, psychological or psychiatric treatment may be required. Organic defects of voice are treated in close cooperation with the medical specialist.

Stuttering

Between ten and fifteen per cent of the cases treated in a typical college clinic are stutterers of college age. Most of these present exceedingly difficult problems and require treatment over a relatively long period of time. As yet, there is little agreement among speech pathologists as to the causes of stuttering, and this lack of agreement is reflected in the use of a variety of methods of treatment. It is, however, generally recognized that there are two basic problems involved in chronic stuttering: the stuttering itself and the attitudes that have been built up around the stuttering. Unless these attitudes can be changed sufficiently, improvement in speech is likely to be slight or transitory. Superficial psychological analysis and treatment is responsible for many of the temporary, sometimes very dramatic, "cures" which are followed by a relapse to the original state of stuttering. The second phase of the problem, the stuttering speech, is usually dealt with by intensive speech re-education. The procedures used for this purpose vary a great deal. In some, a direct attack is made on the stuttering spasm for the purposes of eliminating the stimuli that produce it or of breaking up the habits involved in the stuttering and establishing

new speech habits. In others, through relaxation, suggestion and other devices, the stutterer is put in a condition in which he is able to speak without stuttering and is taught to maintain that condition in all speaking situations. Whatever the methods of treatment employed, in cases of chronic stuttering any permanent improvement is likely to be accomplished slowly and to be in direct proportion to the changes affected in the personality and attitudes of the stutterer.

Hearing disabilities

Another group of cases which is occupying an increasing amount of the time and attention of the college clinic is composed of individuals with hearing disabilities. More frequent and widespread administration of hearing tests is revealing a higher incidence of hearing disability than had been expected. Many college students have hearing deficiencies ranging from slight loss to losses sufficiently great to affect materially their ability to understand speech. If poor hearing has been present over a period of time, it may have resulted in defects of speech and voice, since speech and voice are "tuned by ear." In cases where hearing loss constitutes a handicap, the individual is frequently in need of corrective speech training and training in lip reading, in addition to medical attention and the prescription of a hearing aid if one is found advisable. With the increasing use of periodic, compulsory hearing tests in the schools and the consequent growth of interest in the hard-of-hearing child, the training of students in this field is assuming greater importance.

Organic disabilities

A small proportion of the cases in the typical college clinic are classified, for purposes of treatment, as organic disabilities. These include paralyses of the face, tongue, soft palate, or larynx; spastic paralysis involving the speech mechanism; cleft lip and palate; and a variety of other conditions. The

treatment required in most of these cases is treatment designed to improve the activity and control of the muscles which are affected or to enable the individual to compensate as much as possible for his organic limitations.

Training and Research

A second major function of the college speech clinic is the training of students in speech pathology and speech correction. These students fall into three groups: those who plan to teach in elementary and secondary schools and who need a general introduction to the principles of speech correction; those who plan to become special speech correction teachers; and those who are preparing to do supervisory, clinical, or research work in the field. A knowledge of the fundamental principles of speech training, of experimental and applied phonetics, and of the anatomy and physiology of the speech mechanism are prerequisite to a study of speech disorders. The student then learns what is known concerning the symptoms and causes of the various disorders, their classification, and techniques of diagnosis and treatment. Actual clinical experience with the types and ages with which he will later be called upon to work is an essential part of the training. The training of advanced students generally includes, in addition, physiology, neuro-anatomy and neurology, and abnormal and clinical psychology. The function of the speech clinic in this training program is to provide the cases needed for demonstration and clinical practice.

The third major function of the clinic is to provide data and cases for research in speech pathology. Without the facilities provided by the clinic, much of the work that has been done and is now being done on the nature and causes of disorders of speech, on the development of new techniques of diagnosis, and on the improvement of methods of treatment, would be difficult if not impossible.

Equipment

The type of equipment used in the speech clinic may be inferred from the discussion of the procedures used in diagnosis and treatment. The first requirement is adequate material for phonetic tests. This includes several sets of pictures, mounted in a book or on cards, which can be used in getting children who are too young to read to produce words containing all of the speech sounds so that the examiner may determine with what sounds the child is having difficulty. For the child who is able to read, test material consisting of word lists, sentences, and phonetically constructed stories is used. Examination of the peripheral speech mechanism requires tongue depressors, throat mirrors, a nasal speculum, an examination light, sterilizing equipment, and a head mirror for use in examining the vocal folds. Apparatus for recording lip movements, tongue movements, and breathing is frequently used. Some type of voice recording apparatus is required to preserve samples of speech and voice for further study, as well as for demonstration purposes. Speech records taken at regular intervals ae useful as objective measures of improvement, and more effective independent drill can be done by older students with articulatory and dialectic difficulties if a recording machine is available to enable them to "hear themselves as others hear them."

Since hearing defects frequently play an important part in speech defects, equipment for the testing of hearing is essential. In public schools where large numbers of children are to be tested, two types of audiometer are used: a group audiometer with which as many as forty children may be tested simultaneously; and an individual audiometer for more thorough examination of the hearing of the children who do poorly on the group test. In the clinic an individual audiometer or a set of tuning forks is usually used.

Psychological tests are often required, and, unless a psychological clinic is available to which the child can be re-

ferred for testing, these tests must be administered in the speech clinic by a member of the staff trained in clinical psychology. The psychological tests most frequently used include intelligence tests, and personality and behavior tests of various sorts. Since many of the children to be tested have hearing or speech disabilities, or are retarded in language development, the intelligence tests used must be both of the type requiring language and of the type not requiring language.

School and Hospital Clinics

During the past few years an increasing number of speech clinics have been established in school systems and in hospitals. School clinics may be located in a given center to which children may be referred for examination and diagnosis, or a traveling clinic may be established to serve larger, especially rural, areas.

Hospital clinics have been established primarily for diagnosis and treatment of speech disorders related to organic disabilities. Cleft palate cases, paralysis cases, and stutterers constitute the majority of cases handled in the hospital clinic. The number of private speech clinics has also increased in recent years. Some of these are operated by individuals with little or no training and employ practices that are considered unethical. The profession is as yet not sufficiently well organized to eliminate these abuses, but the rapid growth of the American Speech Correction Association since its founding in 1925 and the increased number of well-trained workers in the field is exerting a strong influence toward higher professional standards.

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