AN EXPERIMENTAL STUDY OF THE EFFECT OF FOUR
SPEECH VARIABLES ON LISTENER COMPREHENSION

Dissertation

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AN EXPERIMENTAL STUDY OF THE EFFECT OF FOUR SPEECH VARIABLES ON LISTENER COMPREHENSION

CHAPTER I

THE PROBLEM

In a world shuddering back from the possible horrors of atomic bombs and germ warfare, many people believe that one approach to world peace and human survival involves better understanding of others, gained through free and clear communication. If opportunities for communication are to be employed to the best advantage, however, their basic nature must be understood and their relative effectiveness evaluated. It is not enough to assume that everyone always comprehends more of what he hears than he does of what he sees in print, or vice versa. One needs to know. Likewise, it may not be wise to accept the hypotheses that organization and difficulty of material and skill of the speaker greatly influence the amount of comprehension an audience gains from a speech. It is desirable to know.

This experimenter, therefore, investigated the effect of four variables upon listener comprehension. They are:

1. Method of presentation (visual or oral)
2. Skill of speaker in oral presentation

3. Organization of material

4. Difficulty of material

The method used was to measure junior-college students' grasp of two speeches presented under different conditions, and to compare the effects of the variables.

Before the details of this experiment are presented, however, it is desirable to review what has already been learned about the variables under consideration. Results of earlier research are summarized in the following chapter.

CHAPTER II

REVIEW OF PREVIOUS RESEARCH

I. MODE OF PERCEPTION

There has been some research in which comprehension gained from silent reading has been compared with comprehension gained from hearing prose. The studies, however, have been carried on under such widely varied conditions that direct comparison of their results is impossible. Hollingworth in 1935 deplored this lack of comparability, after surveying what had been done:

The different investigations are, as a matter of fact, far from comparable. . . . on no one type of comparison are there a sufficient number of investigations for us to be able to draw positive conclusions.¹

It is regrettable that this situation has not drastically changed since then. This discussion, therefore, will deal with previous studies in chronological order.

In 1912 Henmon gives what seems to be a complete history of previous studies on comprehension through seeing versus hearing.² His bibliography of twenty-nine titles

¹ H. L. Hollingworth, The Psychology of the Audience (New York: American Book Company, 1935), p. 74.

² V. A. C. Henmon, "The Relation between Mode of Presentation and Retention," The Psychological Review, XIX (March, 1912), 79-96.

includes even foreign-language reports. He summarizes investigations to 1912 by saying, "The results of the experiments are not in accord."³ For this reason, the writer will not deal specifically with any studies previous to 1912.

Henmon's experiment showed results contrary to opinions held at that time and contrary to the conclusions of many previous experiments. His data were based upon only six subjects, all of whom had had a year or more of laboratory training in psychology. Using nouns, nonsense syllables, and numbers, he found that hearing was clearly superior to seeing in the immediate memory of adults.

In 1917 Erickson and King used pupils in the third through the ninth grades.⁴ The experimenter read two lessons to the subjects, who also read two lessons for themselves. Results of this experiment clearly favored hearing.

Lacy used 315 boys in the seventh through the ninth grades in the New York City public schools on tests of factual information, inference, and moral discrimination, in an experiment conducted in 1919.⁵ Although he found that

³ Ibid., p. 79.

⁴ Harry Goldstein, Reading and Listening Comprehension at Various Controlled Rates (Teachers College Contributions to Education, No. 821. New York: Teachers College, Columbia University, 1940), p. 2.

⁵ Hollingworth, op. cit., pp. 69-70, 73.

differences in scores were small, they were consistently superior for the hearing mode of reception.

In 1921 O'Brien tried a more introspective type of study.⁶ Although he discounted the data he gathered because he could not keep many of the subjective processes under sufficient control, he maintained that a more introspective study yet is necessary to go further in the controversy of comprehension through hearing versus seeing.

Worcester reported on two experiments in 1929. In the first he compared efficiency of memorizing meaningful, connected material by visual and by auditory presentation.⁷ Although the study used only thirteen subjects, summer-session students at the University of Colorado, he found numerous interesting trends. The same number of repetitions was necessary for the original memorization, whether through seeing or hearing the material, but retention appeared to be greater after learning by hearing it. Age did not affect the ability of a person to learn the passages, but older persons did not retain the material well. There were wide

⁶ Francis J. O'Brien, "A Qualitative Investigation of the Effect of Mode of Presentation upon the Process of Learning," The American Journal of Psychology, XXXII (April, 1921), 249-83.

⁷ D. A. Worcester, "Memory by Visual and by Auditory Presentation," The Journal of Educational Psychology, XVI (January, 1925), 18-27.

differences among the individuals in his experiment.

Worcester's other study involved relative accuracy of performance in following directions after a single exposure through hearing and one through seeing Test 1, Form 5, of the Army Alpha examination.⁸ Data for 220 students at Kansas State Teachers College showed that slightly better results were obtained from hearing the directions. Any advantages in the method of conducting this experiment favored those using the seeing method.

In 1928 Russell used a thousand-word composition as his material.⁹ He found that fifth-grade pupils got superior scores by hearing the material, and ninth-grade pupils by seeing it, while seventh-grade pupils did equally well with either method of reception.

How much difference is there between scores on true-false tests read aloud to students and scores on tests read silently by students? Lehman tried this type of experiment in 1925 with his psychology classes at Ohio University.¹⁰ He concluded that, everything else being equal, students did

⁸ D. A. Worcester, "The Ability to Follow Oral and Written Directions," The Educational Research Bulletin, IV (September 9, 1925), 250-51.

⁹ Goldstein, op. cit., p. 2.

¹⁰ Harvey C. Lehman, "The Oral Versus the Mimeographed True-False," School and Society, XXX (October 5, 1929), 470-72.

about the same either way. He did show larger reliability coefficients for the oral presentation than for reading.

Rankin in 1929 gave four standard reading tests to 250 pupils in grades five and seven, then equivalent forms of these tests orally to the same pupils.¹¹ There was a coefficient of correlation of .60 between the reading score and the listening score. Other data showed that there was a wide range in hearing-comprehension ability among the subjects.

The same kind of study in 1930 did not produce similar results. Jensen used true-false examinations, presenting them so that the students received the material by hearing, by seeing, and by a combination of the two.¹² There was a very slight advantage in accuracy for hearing over seeing; the latter was more effective than a combination of the two. Nevertheless, differences were so slight that no trend can be stated.

Still another investigation was made regarding true-false examinations when heard versus when seen. Stumpf in

¹¹ Paul T. Rankin, "Listening Ability," Proceedings of the Ohio State Educational Conference (Columbus: The Ohio State University, 1929), pp. 172-83.

¹² Milton B. Jensen, "An Evaluation of Three Methods of Presenting True-False Examinations: Visual, Oral and Visual-Oral," School and Society, XXXII (November 15, 1930), 675-77.

1931 used a college education class and a statistics class in Keuka, West Virginia.¹³ He gave the test orally first, then a week later gave the same test visually. There was a low correlation between results--.51. The correlation between the hearing score and I. Q. was .36; between visual score and I. Q., .25. The correlations were so low, however, that further investigation is necessary if any valid conclusions are to be drawn.

Is the same kind of relationship true for multiple-response tests? Sims and Knox in 1932 used three-, four-, and five-response multiple-choice tests administered orally to compare with another form of the same test (Thorndike Test of Word Knowledge) given in printed form.¹⁴ Tentative conclusions were that tests heard are but slightly more difficult than ones read silently. Presentation through hearing does not seriously reduce the validity; at least this seemed to be the case when the tests were administered to high-school students. The four- or five-response type seemed to be superior to the three-response form.

Lumley in 1933 tested pupils in the fifth through the

¹³ N. Franklin Stumpf, "Listening versus Reading Method in the True-False Examination," The Journal of Applied Psychology, XIV (1931), 555-62.

¹⁴ V. M. Sims and L. B. Knox, "The Reliability and Validity of Multiple-Response Tests when Presented Orally," The Journal of Educational Psychology, XXIII (December, 1932), 656-62.

eighth grades, using three factual geography selections.¹⁵ This is the first study for which the hearing part of the experiment was a recording, thus making possible greater uniformity in experimental conditions than previously. Lumley's data showed the seeing mode superior, relatively more so in the upper two grades.

There were three studies in 1934. With one hundred sixty-five college freshmen, Corey found an immediate superiority of the visual mode, but by the time of delayed recall two weeks later, the gap had closed.¹⁶ Greene, giving tests to college students on topics in psychology, measured comprehension by a fifty-item objective test, and found no significant difference for immediate or delayed recall.¹⁷

A completely different type of material, fictitious advertising copy which he developed, formed the basis of Stanton's study in 1934.¹⁸ The hearing part of the experiment was presented to college students over a public-address system. For delayed recall of the trade-name-commodity-

¹⁵ Goldstein, op. cit., pp. 2-3.

¹⁶ Stephen M. Corey, "Learning from Lectures vs. Learning from Readings," The Journal of Educational Psychology, XXV (1934), 459-70.

¹⁷ Goldstein, op. cit., p. 3.

¹⁸ Frank N. Stanton, "Memory for Advertising Copy Presented Visually vs. Orally," The Journal of Applied Psychology, XVIII (1934), 45-64.

association, he tested the subjects one, seven, and twenty-one days after the original presentation. The peak in hearing superiority came at the seven-day delayed-recall period. By twenty-one days afterward, per cent of recall both from the hearing and the seeing mode was much smaller, with a much smaller margin between the two.

Using the same type of material and the same technique DeWick in the same year tested college students at the University of North Carolina on delayed recall up to five months.¹⁹ He found a hearing superiority after a twenty-four-hour delay. Both modes were of approximately equal effect for immediate recall. But the loss in retention of material comprehended by seeing decreased steadily, while there was practically no loss from the hearing mode up to 120 hours. After that, the hearing loss was great, but in no case equalled the amount of loss of the material originally comprehended through sight. This is of importance, for the experiment appears to have been done more carefully than the average.

One of the most interesting and most complete

¹⁹ Henry N. DeWick, "The Relative Recall Effectiveness of Visual and Auditory Presentation of Advertising Material," The Journal of Applied Psychology, XIX (1935), 245-64.

investigations was made by Carver in 1935.²⁰ Of the seven related experiments which he conducted, with college students being compared with non-college subjects, the following are most important in relation to this study. His second experiment dealt with the recognition of prose material presented to the eye and to the ear. The ear's reactions were significantly superior, though the superiority was not quite so marked with the college population as with the non-college subjects used.

Carver's third experiment, comprehension of connected meaningful material, showed a marked difference between easy, average, and difficult material. The easier the material, the more likely the hearing comprehension will be superior, he found. For hard material, sight comprehension was more effective, while for average material there seemed to be no especial advantage for either method of reception. He also found that the higher the cultural level, the greater was the capacity to respond by hearing. He observed, too, that there was greater comprehension by all subjects of materials which interested them more.

Carver's fourth experiment involved hearing or seeing preference for prose and poetry. Short literary prose

²⁰ Merton E. Carver, "Listening versus Reading" (Chapter IX, Hadley Cantril and Gordon W. Allport, The Psychology of Radio. New York: Harper & Brothers Publishers, 1935), pp. 159-80.

passages, he discovered, were more enjoyable when heard. But for poetry, Carver found no trend favoring hearing; this is completely at variance with the common assumption that poetry is more fully appreciated when heard than when seen. A careful examination of Carver's method reveals no basis for discounting his findings.

Elliott in 1936 used much the same kind of material as DeWick and Stanton: two groups of trade names, descriptive and non-descriptive.²¹ His carefully performed experiment with one college and one non-college group showed hearing to be a more efficient mode of reception than seeing. In nineteen out of twenty comparisons, hearing surpassed seeing, with a highly reliable difference in fourteen out of twenty. In a recognition test, items received by ear were recognized more often than those by sight. Several minor studies made in connection with this experiment showed that the college group remembered more than the non-college, and that men remembered more than women.

Also in 1936, Young studied comprehension of informative prose when heard and seen by two thousand pupils in

²¹ Frank R. Elliott, Memory for Visual, Auditory and Visual-Auditory Material (Archives of Psychology, No. 199. New York: Archives of Psychology, 1936), pp. 1-58.

the fourth through the sixth grades.²² His test, on which he secured data on comprehension, had twenty short, definite recall items and ten multiple-choice items asking for general impressions, deductions, and the like. One type of the eleven kinds of material he employed was used to test delayed recall one month later. Young's findings of importance to this study indicated that fourth-grade pupils retained very little from hearing reception (21-33%), with a further loss of forty-three per cent of that after one month. This was better, however, than their retention of material received by sight. Sixth-grade pupils received material both by sound and by sight, and retained it about equally well for both. There was a high correlation of results on tests after reception both by sound and by sight --those who did poorly in one mode tended to do poorly in the other mode, also.

In 1937 Rogers tested comprehension of oral and silent reading by University of Iowa freshmen.²³ This experimenter took twenty-four top-decile students and twenty-four

²² William E. Young, "The Relation of Reading Comprehension and Retention to Hearing Comprehension and Retention," The Journal of Experimental Education, V (1936), 30-39.

²³ Maurine V. Rogers, "Comprehension in Oral and Silent Reading," The Journal of General Psychology, XVII (October, 1937), 394-97.

bottom-decile students, administered the Iowa Silent Reading Test by silent reading, word-for-word silent reading, and by hearing. There was no appreciable difference in the results, when the amount of reading (once over) was held constant, except that good readers covered the material more quickly (248 seconds versus 351 seconds); poor readers did similarly but without so great a margin (414 seconds versus 449 seconds). Rogers varied the reading time to allow up to two and one-half re-readings; even under these conditions there was no consistent trend for either group. Rogers reports that these results substantiate findings by Swanson and Anderson--that there is no difference in comprehension for material read silently, orally, or presented over a phonograph. So far as this writer has been able to discover, Swanson's and Anderson's research at the University of Iowa has not been published.

Larsen and Feder in 1940 reported on a complicated experimental situation involving 151 first-year speech students at the State University of Iowa.²⁴ They used Forms A and B of the Nelson-Denny Reading Test, a Reading Memory Test constructed by Larsen, a Phonics Test constructed by

²⁴ Robert P. Larsen and D. D. Feder, "Common and Differential Factors in Reading and Hearing Comprehension," The Journal of Educational Psychology, XXXI (April, 1940), 241-52.

Rogers, a Complex Speech Sound Discrimination Test, an Oral Reading Accuracy Test, and the Iowa Silent Reading Test. Their conclusions were that reading scores tend to be higher than hearing scores for material of comparable difficulty (very little explanation is offered about how they came to this conclusion); that scholastic aptitude correlates more closely with reading-comprehension scores than with hearing-comprehension scores; that there is a tendency for better readers to comprehend relatively better by reading than by hearing; that high-scholastic-aptitude students comprehend difficult material better by reading than by hearing; and that sex differences regarding comprehension of material are not statistically significant. Therefore, these men recommend that, if equal comprehension is desired, material to be presented orally should be somewhat less difficult than material to be presented visually.

In 1940 Goldstein reported the most carefully controlled experiment that the writer has discovered.²⁵ In his "Summary of Related Findings," he explains some of the complicating factors involved in research of this sort:

The literature in the field, when restricted to published studies involving comprehension of meaningful material reveals contradictory findings. . . . The factors responsible for the discrepancies

²⁵ Goldstein, op. cit., pp. 1-67.

in the findings are difficult to disentangle since they are interwoven in the various experiments. Included among these are the nature and difficulty of the material, the social and educational background of the experimental subjects, the quality of the auditory and visual situations, the rates of speech and reading, and the method of equating the modalities.²⁶

Goldstein very painstakingly controlled the rates of presentation and equation of the modalities. He used

. . . 280 male and female subjects, ranging in age from eighteen to sixty-five years, representing a cross section of adult population in terms of intelligence, educational achievement, and cultural background, as determined by standardized tests.²⁷

His prose materials came from the McCall-Crabbs Standard Test Lessons in Reading. He varied the speeds of presentation from one hundred to three hundred twenty-two words per minute, increasing them in increments of thirty-seven words per minute. Precise control of these rates was secured through skillful use of elaborate equipment.

As a result of his experiment, Goldstein came to numerous conclusions and implications. The ones most pertinent to this investigation are as follows:

1. Relative superiority of listening comprehension over reading comprehension diminishes with increasing difficulty of material. The easier the material, the relatively more effective is auditory presentation. Other things being equal, the learning medium used in a given situation should depend upon the level of

²⁶ Ibid., p. 6.

²⁷ Ibid., p. 56

difficulty of the material. For easy materials, listening may prove more advantageous for comprehension. For difficult materials, it does not matter particularly which mode is chosen. It should be kept in mind that the difference between reading and listening comprehension, although statistically reliable, is not sufficient to outweigh other pedagogical or practical considerations.

.

3. The audio-visual differential in favor of listening, and the greater difference on easy than on hard material, both tend to be more marked for the less intelligent groups.

.

5. . . . One-fourth of the experimental group scored significantly higher on one or the other mode.

.

9. There is a decline of reading and listening comprehension with increased rate. . . . The relatively small loss in comprehension at a speed of about 175 to 200 words per minute is probably more than compensated for by the increased amount of material covered.

.

11. At the faster rates, the relative difference between reading and listening comprehension becomes smaller. . . . It is very interesting that listening comprehension should hold its own with reading comprehension at a rate of presentation of about 325 words per minute, in view of the fact that none of the subjects had ever heard speech delivered at that rate before, whereas many may have read at even faster rates. . . .

12. Within the limits of 100 to 325 words per minute no optimum rate of presentation is manifested for the group as a whole, or for groups segregated for intelligence or reading-speed.

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16. Passages which are equivalent for reading may not be equivalent for listening. This finding has implications for audio-visual research. The assumption that equivalent reading materials are equivalent

for listening purposes is not justified, and may effect spurious results.²⁸

In 1943 Rulon used "The Sound of History--Then Came War: 1939," a transcription of speeches and events on three twelve-inch, double-faced platters.²⁹ The material was compiled and edited by Elmer Davis, who also served as commentator. The typescript of the recording was set up in playlet form. The only difference between the format of the recording and the printed material was that the playlet was divided into acts, whereas the recorded material had breaks at the end of each side of the record; sound effects were noted in the script, and the script began with a list of characters.

Three parallel forms of a twenty-five item true-false test plus two five-item-sequence problems were used to measure both rote learning and understanding of the material. Eight hundred forty-four high-school students participated in the experiment. A pre-test was administered before the materials were presented, and a second test was given the next day after the students experienced the materials. If

²⁸ Ibid., pp. 57-62.

²⁹ Phillip J. Rulon and others, "A Comparison of Phonographic Recordings with Printed Material in Terms of Knowledge Gained Through Their Use Alone," The Harvard Educational Review, XIII (January, 1943), 63-76.

the gain between the pre-test and the end-test made by those hearing the material is used, for the sake of comparison, as one hundred per cent, those seeing the playlet made 137% gain, a statistically dependable difference. If only eleventh-grade pupils, for whom the experiment was originally considered best suited, are used, the gain was 163%. Of the seventeen schools involved, only six showed gains by the hearing groups to be superior to those made by the seeing groups. A delayed-retention test one week later showed a slight difference in favor of the playlet group, but that advantage was not statistically dependable. Rulon warns that delayed-recall testing at a still later date might show the hearing group to be superior.

In 1945 Lowenfeld tested blind subjects for comprehension of material presented by Braille and by the Talking Book (the same material as in the Braille but presented through the use of phonograph records).³⁰ He found that comprehension from the Book presentation was considerably greater for low-I.Q. pupils and about the same for the more intelligent ones. His subjects were pupils from the third through the seventh grades; McCall-Crabbs Standard Test Lessons in Reading served as the test material. Writing two

³⁰ Berthold Lowenfeld, "Research in the Education of the Blind," Journal of Educational Research, XL (April, 1947), 583-91.

years later, Lowenfeld concluded that the Talking Book was superior to Braille at the third- and fourth-grade levels. At the sixth- and seventh-grade levels, however, there was no significant difference between the two modes for stories, but comprehension was better in Braille for textbook material.

Hall and Cushing, in 1947, compared the amounts of comprehension gained through exposures to semi-technical, moving-picture film, to oral presentation with visual aids, and to silent reading with photographs included with the text.³¹ Three different types of material were used: (1) information--cause and control of malaria, (2) theoretical--principles of the diesel engine, and (3) performance--use of the micrometer. Three groups, each of one hundred subjects, of Teachers College freshmen at the University of Nebraska, were used. The groups were equated on the basis of the Thurstone Psychological Test of College Aptitude. No significant superiority of one method of presentation appeared. There did seem to be a relationship between scores on the performance material and scores on the quantitative aspect of the College Aptitude Test, and between scores on the theoretical and informational material and scores on the

³¹ William E. Hall and James R. Cushing, "The Relative Value of Three Methods of Presenting Learning Material," The Journal of Psychology, XXIV (1947), 57-62.

linguistic part of the College Aptitude test. Since, in addition, Hall and Cushing found no significant relationship among scores on their three kinds of material, they concluded that the important factor in the situation lies in the relationship of the peculiar quality of the learner to the method. They report that they are doing further work in this area. It will be worthwhile to follow their progress.

Nichols, in 1948, endeavored to isolate factors influencing listening comprehension.³² He found many related ones: intelligence, reading comprehension, recognition of correct English usage, size of listener's vocabulary, ability to make inferences, ability to structuralize a speech, listening for main ideas (not specific facts), use of special techniques to improve concentration, real interest in the subject discussed, emotional adjustment to the speaker's thesis, ability to see significance in the subject discussed, curiosity about the subject, amount of physical fatigue of listener, and audibility of the speaker.

Vernon, in 1950, in a report on an elaborate study includes a summary of a previous one which he conducted with

³² Ralph G. Nichols, "Factors in Listening Comprehension," Speech Monographs, XV (1948), 154-63.

648 subjects whose average age was 17 years.³³ One of two groups matched for attainment read the script of a broadcast; the other group listened to the same broadcast. The reading took less time than the listening. Vernon concluded: "Comparing reading with listening, the listeners were slightly superior both on immediate and delayed recall, though scarcely significantly."³⁴

II. SKILL OF SPEAKER

Up to this point, all the studies summarized have compared comprehension via listening with comprehension through seeing. Another aspect of communication that concerns this experiment is the effect of the skill of the speaker. Does research show that a listener comprehends more information from a skillful than from an unskillful speaker? A thorough search of the literature reveals very few studies in this area.

Woolbert in 1920 conducted an ingenious experiment in which he had a skilled speaker vary the four attributes of voice--pitch, quality, time, and volume--and roughly

³³ P. E. Vernon, An Investigation into the Intelligibility of Educational Broadcasts (London: Audience Research Department of The British Broadcasting Corporation, 1950), pp. 24-25.

³⁴ Ibid., p. 25.

measured the effect of these changes upon the interest and comprehension of the audience.³⁵ He concluded that extreme variations in all four attributes will help the hearers to remember more than they would otherwise. However, each change differs in its effect upon an audience, and individuals differ widely in their responses to a given combination. In general, Woolbert's study indicated that what normally is considered skillful speaking is more effective than average speaking.

In 1943 Glasgow compared the effects of distinct and of indistinct enunciation upon an audience's comprehension of prose and poetry.³⁶ He found that the audience's comprehension suffered considerably from indistinct enunciation. His condensed description of his experiment, however, does not allow of an exact definition of "indistinct enunciation."

Knower, Phillips, and Keoppel in 1945 introduced the factors of good, medium, and poor speakers and good, medium,

³⁵ Charles H. Woolbert, "Effects of Various Modes of Public Reading," The Journal of Applied Psychology, IV. (1920), 162-85.

³⁶ George Glasgow, "The Relative Effects of Distinct and Indistinct Enunciation on Audiences' Comprehension of Prose and Poetry," Journal of Educational Research, XXXVII (1943), 263-67.

and poor oral readers compared with silent reading.³⁷ They made many new comparisons, of which the most interesting and pertinent to this study are the following: (1) Good speakers produced a greater amount of recall than poor speakers or good readers (who read to the audience). (2) Poor speakers and poor oral readers got about the same results from their efforts when using a good speech, while good speaking and good reading produced greater audience recall than poor speaking and poor reading. (3) There is a significant difference in the amount of audience recall of material presented by good, medium, and poor speakers. (4) All listening-comprehension scores had only low correlation with college-ability test scores and with silent-reading comprehension.

Haiman, in 1948, compared the effect of a skilled speaker with the effect produced by an average speaker upon college students motivated to listen by the knowledge that they would be tested on the material heard.³⁸ The selection read to the students was fifteen minutes long, and their

³⁷ Franklin H. Knower, David Phillips, and Fern Keoppel, "Studies in Listening to Informative Speaking," The Journal of Abnormal and Social Psychology, XL (January, 1945), 82-88.

³⁸ Franklyn S. Haiman, "An Experiment in Informative Speaking," The Quarterly Journal of Speech, XXXIV (1948), 355-60.

understanding of it was measured by a comprehension test. Data from certain sections indicate that the audience was able to comprehend significantly more from the presentation of the skilled speaker; however, data from other sections indicate that there was not a significant difference between the amount comprehended from the skilled and from the untrained speaker. Haiman hypothesizes that presentation over a longer period (an hour instead of fifteen minutes) might have shown much greater superiority for the skilled speaker.

Vernon's experiment, which has already been mentioned, and which will be described in more detail later, included the variable of skill of vocal delivery. He concluded: "Good or poor delivery (within reasonable limits) has little effect on intelligibility, though it may influence appreciation. .

. . "39

III. ORGANIZATION OF MATERIAL

In addition to mode of presentation and effect of the speaker's skill, this experiment is concerned with the value of organization of material as it affects an audience's comprehension. What research is there to this point? Although the writer found none which compared the effect of organization of speech-length material with the same material lacking

39 Vernon, op. cit., p. 11.

organization, he found some that dealt indirectly with this matter.

Welborn and English, in 1937, summarized what had been done previously.⁴⁰ Lewis, in constructing his hundred-word legends, made three-eighths of the details irrelevant. These irrelevant materials accounted for sixty-three per cent of the omissions in recall of the material. Though Lewis' experiment did not deal directly with organization, a close relationship is apparent. Laird, Remmers, and Peterson, in experimenting with the learning of Anglo-Saxon words, additions, and dates, found that the subjects learned logical groups much better than randomly organized ones. Although the superiority of organization was apparent for immediate recall, it became much greater in tests for delayed recall. Key found that organization is important in that meaningful material is remembered better than non-meaningful. Guilford's experiment showed that word lists which could be made into sentences were remembered better than ones that had no organization. The difference Guilford found was a statistically dependable one.

Katona, in 1942, performed an interesting experiment

⁴⁰ E. L. Welborn and Horace English, "Logical Learning and Retention: A General Review of Experiments with Meaningful Verbal Materials," The Psychological Bulletin, XXXIV (1937), 1-20.

regarding the effect of organizational sequence in learning.⁴¹ He found that if subjects are to learn material A and material B, which have no particular relationship with each other, the order of learning is unimportant. However, if material A is made up of general principles, and if material B is made up of relevant, unorganized facts, then the order AB is by far the most effective when subjects are tested upon the basis either of recall of facts or of working problems involving the use of both facts and principles. Katona summarizes it succinctly when he says:

The sequence in which understanding comes first was found to be superior to the reverse sequence, both when reproduction of information and when intelligent mastery of a body of knowledge were considered.⁴²

Knower's investigation in 1945 is the most important attempt this writer found on measurement of organizational skills.⁴³ Knower wanted to learn if organizational skills can be measured. To do this he developed three forms of a test constructed to measure skill in:

1. Recognition of a central or unifying idea in simple groups of ideas.

⁴¹ George Katona, "The Role of the Order of Presentation in Learning," The American Journal of Psychology, LV (January, 1942), 328-53.

⁴² Ibid., p. 353.

⁴³ Franklin H. Knower, "Studies of the Organization of Speech Material--I," Journal of Educational Research, XXXIX (November, 1945), 220-30.

2. Recognition of the appropriate wording of a central idea.
3. Recognition of the relationship of outline material to purpose.
4. Differentiation of main supporting ideas from related but insignificant ideas.
5. Recognition of the relative coordinate nature of ideas.
6. Differentiation of significant from insignificant details.
7. Use of relational words and phrases.
8. Use of outline symbols.
9. Use of proper outline indentation form.
10. Arrangement of ideas in sequence.
11. Arrangement of the outline of a complex series of ideas.
12. Synthesizing the material from three sources in a created outline.⁴⁴

As a result of administering this test and examining the data gathered, Knower came to the conclusion that this test had a higher validity in measuring organizational skill in speaking than in writing, and that the skill correlates more closely with ". . . general skills in the interpretation of reading material than to general intelligence as revealed by a test of general vocabulary."⁴⁵

⁴⁴ Ibid., pp. 221-22.

⁴⁵ Ibid., p. 224.

Some experimenters have been interested in discovering the effect of order of arguments within a speech. Jersild, in 1928, found that statements made early in a speech were better remembered than ones made later.⁴⁶ Ehrensberger's findings disagreed with Jersild in this respect.⁴⁷ Sponberg discovered, by arranging arguments in different orders, that the most effective method is to have the longest and most important one first.⁴⁸

Cromwell, in 1949, varied the order of speeches of differing strengths but of equal length to determine what effect the order of speeches has upon an audience.⁴⁹ When he used a strong affirmative and a strong negative speech on the same subject, he discovered that it did not make any difference which one the audience heard first. The final reaction was the same under either order of presentation. When equally strong speeches on two different propositions

⁴⁶ A. T. Jersild, "Modes of Emphasis in Public Speaking," Journal of Applied Psychology, XII (1928), 611-20.

⁴⁷ Ray Ehrensberger, "An Experimental Study of the Relative Effectiveness of Certain Forms of Emphasis in Public Speaking," Speech Monographs, XII (1945), 94-111.

⁴⁸ Harold Sponberg, "A Study of the Relative Effectiveness of Climax and Anti-Climax Order in an Argumentative Speech," Speech Monographs, XIII (1946), 35-44.

⁴⁹ Harvey Cromwell, "The Relative Effect on Audience Attitude of the First versus the Second Argumentative Speech of a Series," (unpublished Doctoral thesis, Purdue University, August, 1949), pp. 1-73.

were used, the order likewise made no difference in their effect upon the audience. This finding, that order of presentation made no difference, was also true of two weak speeches. On the other hand, when one speech was strong, and one weak, on the same side of the case, the greater total audience effect occurred when the weaker speech was heard first. Cromwell theorized that the weaker speech itself has greater influence in the primary position, while position does not affect the impact of the stronger speech.

IV. DIFFICULTY OF MATERIAL

The last variable that is of interest to the writer is that of difficulty of material. Here interest lies not so much in the actual amount of information one gets from easy versus hard material, as in the interaction of the other three variables with this fourth one. For example, is organization more necessary when the material is hard? Most people would assume it to be. Reed found that easy prose, such as "The Marble Statue," was learned more quickly (111 seconds versus 261) and retained better (39.50 versus 4.00) at the end of two weeks, than an abstract passage such as "The Origin of Ideas."⁵⁰ Reed is in accord with experimenters previously mentioned who believe that the most

⁵⁰ Welborn and English, op. cit.

valuable type of memory is based on association. Arnold disagrees.⁵¹

A previously mentioned experiment by Carver, on comprehension of meaningful material, showed a marked difference between easy, average, and difficult material.⁵² The easier the material, the more likely the hearing comprehension will be superior, he found. For hard material, sight comprehension was more effective, while for average material there seemed to be no especial advantage to either method of reception.

Vernon collected responses from an average of ninety-two subjects, most of whom were in the armed forces, for each of fifty Forces Educational Broadcasts between January and May of 1950. The subjects judged whether the talk they heard was easy or difficult, interesting or dull, and wrote in their own words as much as they could remember of the main points of the talk. Vernon had experts analyze the talks for stylistic and content factors, and then compared these variables with the responses his subjects made. He concluded that the variable of style is decidedly less important than the variable of interest aroused by content, and that there are dimensions of style in addition to

⁵¹ Ibid.

⁵² Carver, op. cit.

ease-difficulty (or vocabulary and sentence-length) that may have an equal or stronger effect in determining intelligibility.⁵³

V. SUMMARY

Available reports of research in this general area of communication, then, may be summarized as follows:

(1) Hearing versus seeing. Although there are contradictory findings, evidence seems to be somewhat in favor of hearing as a more effective method for comprehension for delayed, if not for immediate, recall.

(2) Skill of the speaker. What few experiments have been made in this area indicate either that the skill of the speaker makes little difference, or that a skilled speaker succeeds in communicating somewhat more effectively than an unskilled one.

(3) Organization of material. Experimenters have assumed that organization makes a difference in the amount of information that an audience receives. Investigators have concentrated upon varying the kind of organization of prose material, or have dealt with nonsense syllables or bits of information instead of a sample of "speech-length" material.

(4) Difficulty of material. There has been little experimentation here in relation to the other three variables.

⁵³ Vernon, op. cit., passim.

CHAPTER III

THE EXPERIMENT

I. PURPOSE

This experiment was designed to investigate the influence of four factors which might affect the communication of meaningful prose: (1) method of presentation, whether oral or visual; (2) vocal skill of the speaker¹ in oral presentation; (3) difficulty of material presented; and (4) organization of material presented.

II. GENERAL PLAN OF THE EXPERIMENT

In general, the plan of the experiment is very simple. Groups of students in Grades 13 and 14, who were assumed to be comparable, were exposed to two different speeches presented in different ways. The speeches were an "easy" and a "hard" one, presented in "organized" and "disorganized" forms, by silent reading, and also by "vocally skilled" and "vocally unskilled" speakers. Comprehension of the material

¹ For convenience, the term "speaker" is used throughout to include, as well as the usual meanings, a person reading orally a speech originally written and delivered by someone else. Since this experiment is concerned only with listener comprehension, it was immaterial to the audience whether the author or someone else recorded the speech.

was measured by subjects' responses to a thirty-item, multiple-choice test. Average scores for groups were then compared, and conclusions drawn on the basis of these comparisons.

III. DETAILED PLAN OF THE EXPERIMENT

(1) Choice of Subjects

Subjects used in the experiment were thirteenth- and fourteenth-grade students in beginning public-speaking classes in Stockton College,² Stockton, California. These classes were chosen because this beginning course, Speech 1a, is required in Stockton College. The subjects available for the experiment, then, were presumably a more representative and certainly a larger group than would have been available if students in some elective courses had been used.

(2) Choice of Materials for Difficulty

For experimental materials, the writer chose two speeches which have actually been delivered to American audiences. One talk, I. Norman Smith's "Basic Principles of

² Stockton College is a public four-year junior college, including Grades 11 through 14, with an enrollment of about 3500 students.

Canadian Foreign Policy," was delivered to an audience at the University of Colorado on May 12, 1949.³ This speech, about 5,000 words long, was shortened to about 3,750 words to make it nearly the same length as the other one. The other address, "The Open Mind," by Robert Oppenheimer, was presented at the Rochester Institute of International Affairs on December 11, 1948.⁴ This speech is about 3,550 words long.

At this point it is interesting to note the results of an experiment reported by Trenaman in 1951.⁵ He used two forty-five-minute talks, one on "China and Communism" and the other on "The Origin of the Stars." Each talk fell naturally into three phases of approximately fifteen minutes each. Trenaman says:

The results showed that as the talk increased in length so the amount remembered thinned out, not only from the point where assimilation began to diminish, but over the whole extent of the broadcast. The returns began to diminish seriously after 15 minutes. At 30 minutes the listener was approaching the point where the total amount of information conveyed by the talk did not increase as he heard more but in some cases actually decreased. The

³ I. Norman Smith, "Basic Principles of Canadian Foreign Policy," Vital Speeches of the Day, XV (June 1, 1949), 504-08.

⁴ Robert Oppenheimer, "The Open Mind," Vital Speeches of the Day, XV (March 1, 1949), 304-06.

⁵ Joseph Trenaman, The Length of a Talk (London: The British Broadcasting Corporation, 1951), pp. 1-14.

serious listener's own preference is for such talks to run for 30 minutes but very little longer.⁶

When the talks for this present experiment were recorded, they took from nineteen to twenty-four minutes. The results of the British experiment, which arrived when this one was nearly completed, indicate that the length of the speeches used here was probably quite satisfactory for the purpose.

These speeches seemed well paired for the purpose of this experiment, since they both deal with the same area, foreign policy, in relation to the same basic problem, peace and war in world affairs. In addition, the speeches would probably remain timely over the period of years necessary to complete the study.

The Smith speech, later referred to as Speech A, is termed "easy" in relation to the "hard" Oppenheimer speech (Speech B) on two bases. One is that the writer's analysis showed that the hard speech contained approximately a two-to-one ratio of abstract ideas to concrete facts, while the easy speech had the opposite balance. The other is that the easy speech, checked through the use of the Dale formula for determining difficulty of reading material (i.e., on the basis of vocabulary and sentence length) was rated as 9th-10th

⁶ Ibid., unnumbered page.

grade reading-level, and the hard one at the 13th-15th grade reading-level.⁷

(3) Treatment of Materials for Organization

After the factor of difficulty of material had been taken care of in the choice of the two speeches, it was necessary to proceed to the next factor, organization of the material. The writer did not attempt to formulate a technical definition of organization, but accepted the meaning of this term to be the process that reasonable men recognize as "system" or "plan" or "method" in arranging their materials.

To ascertain, then, if the two speeches in their original form were satisfactorily organized for the purpose of this study, the writer outlined both of them at a two-year interval, and compared his outlines. In addition, ten and eleven members of a second-semester, public-address class in Stockton College outlined Speeches A and B respectively, while eight members of a public-address class of the College of the Pacific,⁸ Stockton, California, outlined Speech A,

⁷ Edgar Dale and Jeanne S. Chall, "A Formula for Predicting Readability," Educational Research Bulletin, XXVII (1948), 11-20, 37-54. The computations are shown in Appendix 7.

⁸ At the time of the experiment, College of the Pacific was an upper-division college, having only juniors, seniors, and graduate students.

and eight outlined Speech B. Also, seven members of a graduate class in public address at The Ohio State University, Columbus, Ohio, outlined Speech B.

A careful examination of these outlines for Speech A reveals that there was general agreement in regard to the main structure of the speech. The outliners agreed upon the introduction, the thesis, the main points, and the conclusion. The outline is as follows:

Introduction

Thesis: How Canada's basic principles of foreign policy operate

Body:

- A. What they are
- B. How Canada has been helping war-torn Europe
- C. How Canada has been opposing communism
- D. How Canada cooperates with Great Britain in the framework of the Commonwealth
- E. How Canada cooperates with the United States

Conclusion

These outlines were made from the 3,750-word text of the speech used in the experiment. Although this text actually contained only about three-fourths of the original speech, no one seemed especially conscious of any omissions, as neither of the two deletions appeared to affect the unity of the speech. The first deletion of 1,050 words was a complete main point on Canada's efforts to prevent war and

preserve peace. Its position was between A and B. The second deletion, of two hundred words, came from the last part of Smith's development of the last main point, wherein he listed the five basic principles adopted by the Permanent Joint Defense Board. Naturally, a slight rearrangement of words before and after the deletions smoothed the transitions and helped to make the changes hardly noticeable.

Upon the basis of these analyses, then, the writer concluded that Speech A, in its 3,750-word form, was satisfactorily organized for the purpose of this experiment, and could be used without change as the organized form, or Text A.⁹

A careful examination of the outlines for Speech B indicates that there was general agreement on the introduction and the thesis. There was satisfactory accord as to the basic ideas of the speech. However, the fact that the outline divisions were not identical may have been caused by Oppenheimer's use of an abbreviated motivated-sequence plan of organization, with incomplete transitions, and with elaborate development of a few main points. Or it may be likened to the kind of organization which Thonssen and Gilkinson

⁹ The exact text of the speech appears in Appendix 1.

describe as the "natural" method,¹⁰ in which the author proceeds chronologically to his conclusion by almost imperceptible steps.

The outline is as follows:

Introduction (Practically everyone agreed at this point.)

Problem or Thesis: How we can enlist time and nature in the conduct of our foreign affairs, delimited and explained by a discussion in detail of how to control atomic energy.

- A. History of the problem, especially the U. S. role in it. (This seems to the writer to be one main point. Many outliners made a separate main point of the U. S. part, or of Oppenheimer's elaboration upon U. S. principles in dealing with such a problem.)
- B. Task of facing the somber and grim elements of the future and keeping them from obscuring it.
- C. Way of meeting the problem, working toward a solution, combined with conclusion.

Although this outline deviates from what might be considered a typical outline of any of the standard methods of organization, and although Oppenheimer's transitions are not clear enough to indicate in detail exactly how he would have outlined his speech, the experimenter concluded that, for the purpose of this experiment, the speech is sufficiently well organized to be used for the organized form,

¹⁰ Lester Thonssen and Howard Gilkinson, Basic Training in Speech (Boston: D. C. Heath and Company, 1947), pp. 501-02.

or Text B.¹¹

After the original forms of the two speeches were decided upon as the organized forms for use in the experiment, it was necessary to devise a method of disorganizing the material. So that the disorganized form might be as comparable as possible to the organized form of each speech, it seemed desirable that each form use exactly the same words. Shifting words within sentences, or sentences within paragraphs, however, appeared likely to result in nonsense, not disorganization. Therefore, it was decided to rearrange paragraphs in random order.

After paragraphs of the organized forms were numbered, corresponding numbers were thoroughly shuffled in a container, and drawn out. Controls were added as follows to the random order set up by the drawing: The first paragraph of the organized form was not permitted to fall within the first five of the disorganized. The last paragraph of the organized form was not permitted to fall within the last five of the disorganized. In addition, no two paragraphs were permitted to come in their original order, and no three paragraphs of the same main point were allowed to follow each other. In order to avoid this, a paragraph from another main point was inserted. Where it was desirable to

¹¹ The exact text of the speech appears in Appendix 2.

change the wording of a transition at the beginning of a paragraph in order to make the material read more smoothly, such a change was made. Slight rewording was necessary at the beginnings of only two paragraphs in each of the two speeches.

From Text A, paragraphs were grouped under seven main divisions, as follows:

Introduction	1- 5
Thesis and A	6-11
B	12-19
C	20-23
D	24-32
E	33-43
Conclusion	44

Following is the order in which these paragraphs appear in the disorganized form of Speech A, hereafter referred to as Text AA:¹²

39, 27, 35, 12, 17, 33, 18, 29, 44, 15, 22, 4, 21, 36, 31, 1, 42, 13, 25, 2, 38, 28, 16, 3, 41, 9, 5, 24, 11, 40, 30, 19, 6, 43, 23, 34, 20, 26, 8, 32, 10, 14, 7, 37.

For the purpose of disorganization, the paragraphs of

¹² The exact text of the speech appears in Appendix 3.

Text B were grouped as follows:

Introduction	1- 2
Thesis or problem	3- 5
A	6-14
B	15-19
C, including conclusion	20-23

These were then arranged in random controlled order so that the final distribution of paragraphs is as follows for the disorganized form of Speech B, hereafter referred to as Text BB:¹³

18, 21, 7, 22, 20, 10, 19, 17, 14, 23, 2, 9, 1, 8,
16, 4, 13, 3, 12, 5, 11, 15, 6.

(4) Treatment of Materials for Mode of Presentation

Mode of presentation to the subjects is a very important variable in this experiment. Practical considerations forbade the use of films, although films might be considered the most desirable visual method of presenting materials so that the rate of exposure by silent reading would be more nearly comparable to that by hearing. Therefore, Speech A and Speech B, in both the organized and the disorganized forms, were mimeographed for presentation to subjects by

¹³ The exact text of the speech appears in Appendix 4.

silent reading. The material was single-spaced, with double spacing between paragraphs. Adequate margins were left on the seven and one-half pages of Speech A, and the six and one-half pages of Speech B.

In the hearing situation, skill of the speaker is the variable with which this study is concerned. Determination of the degree of skill, however, was not undertaken in terms of an academic description and differentiation. The criterion was a practical one. Two skilled and two unskilled male¹⁴ speakers, instead of one from each category, were used in order to minimize the effect of any unusual personality attributes. An effort was made, also, to equate the speakers roughly in terms of I. Q., cultural status, and age group.

Two panels of prospective male speakers were selected. For the skilled speakers, Professor John Crabbe, head of radio training at the College of the Pacific, recommended his six best radio majors. The two skilled speakers were to be chosen from these six. For the panel of unskilled speakers, six students were chosen at random from beginning public-speaking classes: five were from a beginning public-speaking course (15th- and 16th-grade level) of the College

¹⁴ Male speakers were chosen for practical reasons: (1) There were more males available to choose from, and (2) most public speeches are made by men, anyway.

of the Pacific, and one was from a beginning public-speaking course in Stockton College. None of the unskilled speakers had had any previous formal training in speech, nor had the beginning course which they were then taking touched, as yet, upon any aspects of vocal delivery. None of them had any substantial amount of practical speech experience.

Added to both of these panels for control purposes was a College of the Pacific student who was taking the beginning course, but who had had six weeks of summer-stock experience in theatre.

Each member of these two panels recorded the same two-minute selection on tape under approximately the same conditions.¹⁵ The selection used was comparable in difficulty and subject matter to the material chosen for the main portion of the experiment. Each speaker was requested to read the selection silently to himself, then once to the experimenter who corrected the speaker on pronunciation, once. The material was then recorded. The recording was made on a Masco Sound Reel machine, manufactured by Masco Sound Systems, on plastic tape, in a room relatively undesirable acoustically.

In order to make certain that there were no minor

¹⁵ The text of this selection appears in Appendix 8.

speech defects represented, each recording was checked by Dr. Howard Runion, whose major work as chairman of the Department of Speech at the College of the Pacific is in speech correction, and by Professor Granville Basye, Director of the Speech Clinic at the College of the Pacific. In addition, one of Professor Basye's advanced speech-correction classes, of eight students, checked each recording. All panel members were judged to have relatively normal speech.

Three panels of judges then rated separately both panels of speakers, from "1" for the best to "7" for the worst. Directions for the scoring were given extempore.¹⁶ Eleven faculty members of the speech departments of Stockton College and College of the Pacific made up one group of judges; another group included fourteen second-semester public-speaking students in Stockton College, and the third group was twenty-seven second-semester radio majors in the College of the Pacific. For each group the order of the recordings was varied.¹⁷ The radio students and the speech students rated both panels within a fifty-minute class period. The faculty did their ratings individually, or in groups of two or three within a two-day period.

¹⁶ "You will hear seven persons reading the same two-minute selection. On the basis of delivery, please rate these persons in rank order, with 1 indicating the best. Assign no two the same rating."

¹⁷ The complete data appear in Appendix 9.

The second-semester students in Stockton College recognized none of the speakers in the recordings; some of the faculty recognized some; and most of the radio majors recognized most of the skilled speakers' panel. Nevertheless, all three groups were consistent in their ratings of the speakers on the panels.¹⁸ In addition, the control speaker was judged least skilled of the skilled panel by all three groups, and most skilled of the unskilled group by two out of three sets of judges. The third set rated another of the unskilled speakers as equal in skill to the control case, probably because he had an unusually "warm, sincere" voice. Even then, the control case received seven first places among the unskilled speakers to the "sincere" man's four. It appears obvious from these ratings that the two groups were disparate in ability.

For the purpose of this experiment, then, the two speakers rated most skilled, and the two rated least skilled were used as the skilled and the unskilled speakers. Data on their backgrounds follow:

¹⁸ The ratings of each speaker of the panels appear in Appendix 10.

TABLE I
DATA ON SKILLED AND UNSKILLED SPEAKERS

Speaker	Ex-GI	Class	Age	Estimated IQ
Skilled A	Yes	Senior	23	High
Skilled B	Yes	Senior	27	Average
Unskilled C	Yes	Senior	23	Average
Unskilled D	Yes	Freshman	25	Average

On the basis of the background data shown in Table I, and even more certainly after hearing these speakers, the experimenter concluded that these were two well-matched pairs of skilled and unskilled speakers.

After the speakers were chosen, the next step in the experiment was recording their readings of the two speeches in both the organized and disorganized forms. Accordingly, on Saturday, April 1, 1950, in Studio B of the College of the Pacific's FM radio station, KCVN, the two unskilled speakers and the first skilled speaker assembled.

Recording of the speeches proceeded according to a definite plan. Unskilled speaker C was given a copy of Text A, a private room, a dictionary, and a request to spend an hour practicing the material. At the end of that time, unskilled speaker C, with skilled speaker A acting as recording engineer, began recording the easy speech, first in its organized form, Text A, and then in its disorganized form, Text AA. In order that the quality of the recorded voice

might be as good as possible, speakers were allowed breaks for clearing their throats.

After completing his recordings of Speech A, unskilled speaker C was again allowed an hour to study, this time the script for the hard speech. During this hour of study for unskilled speaker C, unskilled speaker D, who had been studying Speech A for an hour, recorded it in the organized, then the disorganized form. Next unskilled speaker C recorded Speech B in its organized and disorganized forms, while unskilled speaker D studied Speech B in his private room. Unskilled speaker D then recorded the organized and disorganized forms of Speech B, with the experimenter acting as engineer.

Skilled speaker A, who had made some preparation of Speech B while the experimenter was acting as engineer for the last recording of unskilled speaker D, was given an additional half-hour of preparation before recording both forms of Speech B. Skilled speaker A then spent about half an hour preparing Speech A before recording both forms of it.

On the following Thursday evening, from 7 p.m. to 9 p.m., and from 9:30 p.m. to 11 p.m., skilled speaker B, following the same routine of preparation and recording, recorded both forms of both speeches. On Saturday, April 8, unskilled speaker D, whose first recordings of Speech B had been ruined by a loose connection in the recorder, returned

to re-record Text B and Text BB. He was given a short time for review before making these recordings.

The recordings were all made with a Magnecorder, type PT6-AH, on paper tape, under ideal conditions. Whenever too much of a break occurred, as because of coughing, the speaker was allowed to start over again at the beginning of the paragraph. Usually two breaks were made in each of the speeches. The completed recordings, when they were played back, took from nineteen to twenty-five minutes each.¹⁹

(5) Materials for Measurement

Practical considerations influenced greatly the preparation of materials for measurement. It seemed possible to allow only one fifty-minute period per class for the experimental work. Those fifty minutes had to include establishment of rapport, exposure to the text or recording of a speech, distribution of test materials, testing, and collection of test materials. If a maximum of five minutes was allowed for establishing rapport, five minutes for distributing and collecting testing materials, and twenty-five minutes for exposure to experimental materials, it was obvious that the actual testing could not occupy more than fifteen

¹⁹ The time required for playing each recording appears in Appendix 11.

minutes. Therefore, it seemed advisable to use a multiple-choice type of test of no more than thirty items.

The experimenter constructed a test for each of the speeches. Each paragraph in each speech was represented by at least one test question. Each question had four alternatives, briefly stated. Before these tests could be used with any degree of confidence, however, it was necessary to determine their validity and their reliability. The tentative forms, then, were administered during the summer quarter of 1949 to two groups at The Ohio State University. One group answered the questions purely by guessing, without being exposed to the texts. The other group was exposed to the text before being confronted with the questions. An item analysis was made to determine the per cent of each group who answered each alternative of each individual item. Presumably, if the test were measuring what it was supposed to measure, a higher percentage of the group exposed to the text, as contrasted with those not so exposed, should choose the correct answer. The writer then used the Kelley Difference Computer to determine whether or not the percentage of guessers answering an item correctly differed significantly from the percentage of those exposed to the material who answered the question correctly.

Upon the basis of these data, both tests were revised, mainly by reworking items. However, additional items

had to be added to Test B. After an administration of the revised tests,²⁰ the responses to the items were again analyzed. Through this method, thirty items which appeared to discriminate between those who guessed and those who were exposed to the texts, were secured for each test. For Test A, twenty-two items appeared to discriminate at the one per cent level of confidence or better, and the other eight between the one and the seven per cent level of confidence. For Test B, twenty items appeared to discriminate at the one per cent level of confidence or better, and the other ten between the one and the seven per cent level of confidence.

It may be interesting at this point to compare the mean scores made on the final forms of the tests by the guessers with those made by the ones who were exposed to the materials. The mean scores of the guesses come from students in beginning public-speaking classes in Stockton College, classes which were not otherwise included in the experiment. The comparisons appear in Table II, immediately following.

²⁰ The number of cases to whom these tests were administered under different conditions appears in Appendix 12.

TABLE II

MEAN COMPREHENSION SCORES FOR GROUPS WHO WERE EXPOSED
TO THE EXPERIMENTAL MATERIALS AND THOSE WHO WERE NOT

Group	N	Mean Scores	
		Test A	Test B
Guessed - Stockton College	84 104	7.61	8.54
Exposed - Stockton College	226 264	16.47	13.62

After tests with some degree of validity were constructed, it was necessary to determine their reliability. To this end, both tests were administered during the fall semester of 1949 to separate groups of students in Stockton College. These students had been exposed to the texts by silent reading. Reliability was determined by calculating correlation coefficients between scores on odd, and scores on even items. The obtained r 's were corrected by the Spearman-Brown prophecy formula. Data indicated that Test A had a reliability coefficient of $.797 \pm .033$, and Test B, of $.794 \pm .032$. Although higher reliability coefficients would have been desirable, these r 's were accepted as indications that the tests would probably measure what they measured with an adequate degree of consistency.

The final copies of the tests²¹ were mimeographed for

²¹ Copies of the tests appear in Appendixes 5 and 6.

administration with separate International Business Machine answer sheets. The copies had adequate margins, triple-spacing between test items, and single-spacing between the four alternatives for each item. Bold-face capitals frequently reminded the student to answer on the basis of what the speaker or writer said, not what the student's personal opinions were. The page on the front of the test gave directions and an example of how to answer the test with the IBM answer sheets.

IV. ADMINISTRATION OF THE EXPERIMENT

Experimental data were gathered on April 10, 12, and 14, 1950, and again on September 29 and October 2, 1950, at Stockton College. Subjects were students in the required, beginning public-speaking course, Speech 1a, on the 13th- and 14th-grade levels.

Students took part in the experiment in class groups. During both the spring and the fall semesters, those who were exposed to the material through seeing, i.e., silent reading, performed their part of the experiment in their customary classrooms. However, conditions differed between spring and fall semesters for those exposed to the material by hearing the recordings. In the spring, each class reported to Room 306 in the Administration Building on the College of the Pacific campus. This classroom did not have very desirable

acoustical characteristics. The recordings were played on a DuKane tape recorder, Model #11A55 made by the Operadio Manufacturing Company, St. Charles, Illinois. Although a few students complained of being unable to hear the recordings, instructors who accompanied their classes agreed that the words could be heard, although more than the normal amount of concentration was needed. In the fall-semester administrations, however, hearing conditions were definitely improved. All of the hearing subjects came by classes to Studio A of the College of the Pacific's FM radio station, KCVN, where equipment and acoustical conditions might be considered ideal.

During both the spring and the fall administrations, no extraneous factors that might have affected rapport or motivation were apparent. There were, for example, no unusual school events taking place; the weather was neither rainy, nor too warm nor too cold.

In an effort to get as much information as possible from the data, classes were exposed to experimental materials and tests according to the plan shown in Table III.

TABLE III
PLAN FOR CONTROL OF EXPERIMENTAL VARIABLES

VARIABLES	PLAN FOR PRESENTATION OF EXPERIMENTAL MATERIALS TO CLASS GROUPS																			
DIFFICULTY	E A S Y										H A R D									
ORGANIZATION	ORGANIZED					DISORGANIZED					ORGANIZED					DISORGANIZED				
MODE OF PRESENTATION	HEAR				SEE	HEAR				SEE	HEAR				SEE	HEAR				SEE
VOCAL SKILL	Skill		Unskl			Skill		Unskl			Skill		Unskl			Skill		Unskl		
SPEAKERS	A	B	C	D		A	B	C	D		A	B	C	D		A	B	C	D	
CLASSES	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

The bottom line in Table III on the preceding page both numbers the columns and represents individual classes. Thus Class 1 was exposed to the organized form of the easy speech by hearing the first vocally skilled speaker (Speaker A); Class 2, the same, except from the second vocally skilled speaker (Speaker B); Class 3, the same except from the first unskilled speaker (Speaker C); Class 4, the same except from the second unskilled speaker (Speaker D); and Class 5, the organized form of the easy speech through silent reading. In the same manner, Classes 6 through 10 were exposed to the disorganized form of the easy speech. Classes 11 through 20 were exposed to the hard speech in the same manner as Classes 1 through 10 were to the easy speech.

Extempore directions given to each class upon its exposure to the experimental materials were something like this:

You are being asked to take part in an experiment in the field of speech. First you will (hear/read silently) a speech. Then you will be asked to take a multiple-choice test over the content of the speech. There will be no questions about the speech technique,²² as, for example, regarding transitions, but only upon the ideas in the speech. It will take about twenty-three minutes to (hear/read) the material. (If you finish reading before that time, you may glance back through the speech.)

²² The warning about disregarding speech techniques was necessary, because many classes were at that time studying transitions and ways to develop main points. Subjects might have ignored content while concentrating upon technique.

Before administration of the test, these directions were given:

There are two additions to the directions printed on the first page: (1) Please sit quietly in the seats if you finish before the time is up--you will have fifteen minutes for the test--and (2) Please answer every question. If you don't know the answer, guess. You may begin now.

During the silent reading of the text, a ten-minute and a five-minute warning were made. The same kind of warning was given during the test itself, usually by writing such a note on the blackboard, then orally calling it to the students' attention.

In general, morale during the administration of the experiment was about average. Occasionally there was someone who did not quite understand or who refused to cooperate. When a subject was asked to guess answers he did not know, he sometimes put aside the questions, and proceeded to guess the complete list of answers. Naturally, papers of that sort were discarded. Possibly the attitudes during the experimental administration could be compared to those of an average audience. Some subjects were very enthusiastic and cooperated whole-heartedly. Others showed average interest, and a few were ostentatiously bored or actively uncooperative.

Students who entered the room a few minutes late for the silent reading were permitted to take part along with the others if they finished their reading within the time

allotted. Most did. If one entered the room after the playing of the recording began, however, his paper was discarded, since there was no way for him to glance back over the preceding material and catch up with the rest.

After all the tests, for both spring and fall administrations, had been given and scored, it was found that there were 490 usable cases. Some cases had been discarded because the student was not of the proper grade level, or had obviously not cooperated in the test situation, or because no score on the American Council on Education Psychological Test²³ was available. All cases used finally were of the 13th- and 14th-grade level, and had scores on the ACE test.

²³ American Council on Education Psychological Examination for College Freshmen, prepared by L. L. Thurstone and Thelma Gwinn Thurstone (Washington, D.C.: The American Council on Education, 1941, 1948).

CHAPTER IV

ANALYSIS OF DATA AND RESULTS

I. ANALYSIS OF DATA

Analysis of the data was aimed at discovering the effect of the four experimental variables, organization of the material, difficulty of material, mode of presentation, and skill of the speaker, on the comprehension of prose. Before scores on the experimental comprehension tests could be profitably examined, however, it was necessary to determine whether or not the groups to be compared were equivalent in ability. The basis which seemed most reasonable to use for equating these groups was the raw "L" score (skill in the use of language as opposed to non-verbal facility) of the ACE Psychological test, which all entrants to Stockton College must take. Originally, the writer planned to use a combination of this raw "L" score and the reading score on the Cooperative English test published in 1943 by the Cooperative Test Service. However, since a correlation between these two scores, using 1200 cases, showed a coefficient of correlation of $.85 \pm .01$, it seemed unnecessary to use both.

In determining the comparability of groups on the basis of their raw "L" scores, means and standard deviations were computed for each group. Differences between group means, then, were evaluated by use of the t or critical

ratio.¹

It should be remembered that data were originally collected in two different semesters, under slightly different conditions. Because of the relatively small number of cases in each category, it was desirable to combine data from spring and fall administrations. Before this was done, however, means of the "L" scores for the different experimental groups were computed and compared separately by sex.² These comparisons revealed that the spring and fall groups were equivalent in terms of raw "L" scores. In only three out of thirty-two comparisons for boys, and none out of thirty-two comparisons for girls, was the difference between mean "L" scores of spring and fall groups great enough to be considered dependable at the five per cent level of confidence. Means of comprehension-test scores were also compared, and showed no statistically dependable differences between spring and fall administrations.²

Once the semester separation of data had been eliminated, the number of cases for each experimental category was appreciably increased. Data were still segregated by sex, however, because of the possibility that men might respond

¹ Henry E. Garrett, Statistics in Psychology and Education (New York: Longmans, Green and Co., 1947), pp. 181-227.

² These data appear in Appendix 13.

to the experimental materials differently from women. It seemed desirable, also, to discover whether there was any important difference between average "L" scores for men and women.

Comparison of mean "L" scores for men and for women revealed only two out of thirty-two instances where the difference could be considered real, and not attributable to chance. However, the average "L" scores for women were consistently higher than those for men.³

Differences between average scores of men and women on the comprehension test were also compared. In no comparison was the difference great enough to warrant belief that the true difference between the groups, in terms of comprehension-test scores, was greater than zero.³

These comparisons resulted in a decision to combine all data regardless of the sex factor and of the semester factor. Remaining treatment of data, then, will be discussed in terms of the experimental variables only--difficulty of material, organization of material, mode of presentation, and vocal skill of the speaker.

In order to discover the effect of the four experimental variables upon the comprehension of prose, two steps were necessary: (1) to make certain that the groups to be

³ These data appear in Appendix 14.

compared were of approximately the same ability, and (2) to compare scores made on the tests of comprehension by those groups.

Groups to be compared were considered equivalent in ability if the t value for the difference of their means on raw "L" scores was less than 1.00 ($P = .50$). Wherever this condition did not occur naturally, sufficient cases were discarded, by deleting all the cases in enough frequency ranges, to make the groups equivalent.

Data on each of the experimental groups appear in Table IV on the following pages.

TABLE IV

COMPREHENSION-TEST MEANS AND RAW "L" MEANS FOR EACH OF EXPERIMENTAL GROUPS

Experimental group	N	Comprehension-test scores			Raw "L" scores on ACE test		
		Mean	S.E.M	S.D. Dis	Mean	S.E.M	S.D. Dis
Hearing	313	13.47	.26	4.56	59.00	.90	15.85
Seeing	177	17.53	.37	4.87	58.71	1.11	14.70
Easy	226	16.47	.34	5.09	59.47	1.07	16.00
Hard	264	13.62	.29	4.66	58.39	.92	14.95
Organized	228	15.42	.36	5.40	59.93	1.01	15.15
Disorganized*	262	14.52	.29	4.71	58.00	.97	15.60
(To compare with <u>organized</u>)	245	14.71	.30	4.72	60.03	.90	14.00
Skilled*	169	13.89	.35	4.50	57.74	1.25	16.20
(To compare with <u>unskilled</u>)	156	14.17	.36	4.45	60.19	1.15	14.30
Unskilled	144	12.97	.38	4.58	60.49	1.28	15.25
Hear easy	153	15.07	.37	4.57	58.68	1.33	16.35
Hear hard	160	11.93	.32	3.99	59.31	1.22	15.35

*Where two or three lines of data appear for one group, it indicates that cases were deleted for purposes of equating, as described on page 63.

TABLE IV (continued)

COMPREHENSION-TEST MEANS AND RAW "L" MEANS FOR EACH OF EXPERIMENTAL GROUPS

Experimental group	N	Comprehension-test scores			Raw "L" scores on ACE test		
		Mean	S.E.M	S.D.Dis	Mean	S.E.M	S.D.Dis
Hear organized*	145	13.74	.40	4.80	59.02	1.32	15.80
(To compare with <u>see</u> <u>organized</u>)	136	14.01	.41	4.75	60.99	1.22	14.20
Hear disorganized	168	13.23	.33	4.32	58.99	1.23	15.90
Skilled easy*	87	14.99	.50	4.60	56.29	1.82	16.85
(To compare with <u>skilled</u> <u>hard</u>)	77	15.60	.50	4.33	59.97	1.62	14.15
(To compare with <u>see easy</u> <u>and unskilled easy</u>)	72	15.71	.52	4.40	61.53	1.58	13.30
Skilled hard	82	12.72	.45	4.07	59.27	1.71	15.40
Skilled organized*	76	13.86	.56	4.84	57.83	1.83	15.85
(To compare with <u>organized</u> <u>see and organized unskilled</u>)	69	14.20	.58	4.82	60.69	1.66	13.65
Skilled disorganized*	93	13.91	.44	4.20	57.66	1.72	16.50
(To compare with <u>dis-</u> <u>organized unskilled</u>)	87	14.14	.45	4.13	59.80	1.54	14.30
Unskilled easy	66	15.18	.56	4.52	61.82	1.87	15.05

* Where two or three lines of data appear for one group, it indicates that cases were deleted for purposes of equating, as described on page 63.

TABLE IV (continued)

COMPREHENSION-TEST MEANS AND RAW "L" MEANS FOR EACH OF EXPERIMENTAL GROUPS

Experimental group	N	Comprehension-test scores			Raw "L" scores on ACE test		
		Mean	S.E.M	S.D.Dis	Mean	S.E.M	S.D.Dis
Unskilled hard	78	11.10	.42	3.72	59.36	1.75	15.35
Unskilled organized	69	13.61	.58	4.76	60.33	1.90	15.65
Unskilled disorganized	75	12.39	.50	4.33	60.63	1.73	14.90
See easy	73	19.41	.58	4.88	61.20	1.78	15.10
See hard*	104	16.21	.44	4.42	56.97	1.39	14.15
(To compare with <u>see easy</u> , <u>hear hard</u> , <u>skilled hard</u> , <u>and unskilled hard</u>)	92	16.70	.46	4.35	60.05	1.25	11.90
See organized	83	18.35	.57	5.14	61.54	1.53	13.85
See disorganized*	94	16.81	.47	4.51	56.22	1.55	14.95
(To compare with <u>see</u> <u>organized</u>)	72	17.51	.52	4.42	62.08	1.39	11.70
(To compare with <u>hear dis-</u> <u>organized</u> and <u>unskilled</u> <u>disorganized</u>)	81	17.27	.50	4.49	59.91	1.41	12.60

*Where two or three lines of data appear for one group, it indicates that cases were deleted for purposes of equating, as described on page 63.

TABLE IV (continued)

COMPREHENSION-TEST MEANS AND RAW "L" MEANS FOR EACH OF EXPERIMENTAL GROUPS

Experimental group	N	Comprehension-test scores			Raw "L" scores on ACE test		
		Mean	S.E.M	S.D.Dis	Mean	S.E.M	S.D.Dis
Easy organized	115	17.02	.52	5.53	60.28	1.55	16.60
Easy disorganized	111	15.91	.43	4.52	58.67	1.46	15.30
Hard organized	113	13.79	.45	4.75	59.58	1.29	13.60
Hard disorganized*	151	13.49	.37	4.59	57.50	1.29	15.85
(To compare with <u>hard organized</u>)	141	13.61	.39	4.65	59.52	1.21	14.35

* Where two or three lines of data appear for one group, it indicates that cases were deleted for purposes of equating, as described on page 63.

II. RESULTS

Based on three of the experimental variables, there are three primary comparisons in this study: easy vs. hard; organized vs. disorganized; and hearing vs. seeing. One intermediate comparison, skilled vs. unskilled, will be treated as if it were a primary comparison. There are, also, twenty-eight secondary comparisons.

The results of these comparisons, organized under the headings of the four experimental variables, follow.

(1) Organization

What effect had organization upon comprehension of prose? Data bearing on this question are shown in Table V.

TABLE V
COMPARISON OF MEAN COMPREHENSION SCORES OF GROUPS
EXPOSED TO ORGANIZED OR DISORGANIZED MATERIALS

Group	N	Mean	S.E. _M	<u>t</u>	Probability
Organized	228	15.42	.36	1.51	Between .50 and .10
Disorganized	245	<u>14.71</u>	<u>.30</u>		
Difference		.71	.47		

Organization demonstrated a slight superiority over the kind of disorganization used in this experiment, but it is not a statistically dependable difference.

"But," one might question, "are there trends within the data which comparison of totals conceals?" In order to investigate this possibility, the writer made comparisons on the basis of sub-groups, as follows.

Did organization make a difference for those who were exposed to the material by silent reading? Data on this question are shown in Table VI.

TABLE VI

COMPARISON OF MEAN COMPREHENSION SCORES OF GROUPS EXPOSED TO ORGANIZED OR DISORGANIZED MATERIALS BY SEEING

Group	N	Mean	S.E. _M	<u>t</u>	Probability
Organized see	83	18.35	.57	1.09	Between .50 and .10
Disorganized see	72	<u>17.51</u>	<u>.52</u>		
Difference		.84	.77		

The slight superiority of organization is not statistically dependable.

Did organization make a difference for those who were exposed to the material by hearing? Data on this question are shown in Table VII.

TABLE VII

COMPARISON OF MEAN COMPREHENSION SCORES OF GROUPS EXPOSED TO ORGANIZED OR DISORGANIZED MATERIALS BY HEARING

Group	N	Mean	S.E.M	<u>t</u>	Probability
Organized hear	145	13.74	.40	.98	Between .50 and .10
Disorganized hear	168	<u>13.23</u>	<u>.33</u>		
Difference		.51	.52		

The slight superiority in favor of organization is not statistically dependable.

Did organization make a difference for those who were exposed to the easy speech? Data on this question are shown in Table VIII.

TABLE VIII

COMPARISON OF MEAN COMPREHENSION SCORES OF GROUPS EXPOSED TO EASY ORGANIZED OR DISORGANIZED MATERIALS

Group	N	Mean	S.E. _M	<u>t</u>	Probability
Organized easy	115	17.02	.52	1.63	Between .50 and .10
Disorganized easy	111	<u>15.91</u>	<u>.43</u>		
Difference		1.11	.68		

The superiority of organization, though somewhat larger, is still not statistically dependable.

Did organization make a difference for those who were exposed to the hard speech? Data bearing on this question are shown in Table IX.

TABLE IX

COMPARISON OF MEAN COMPREHENSION SCORES OF GROUPS EXPOSED TO HARD ORGANIZED OR DISORGANIZED MATERIALS

Group	N	Mean	S.E. _M	<u>t</u>	Probability
Organized hard	113	13.79	.45	.30	Greater than .50
Disorganized hard	141	<u>13.61</u>	<u>.39</u>		
Difference		.18	.60		

Practically speaking, there is no difference shown here.

Did organization make a difference for those exposed to the skilled speakers? Data on this question are shown in Table X.

TABLE X

COMPARISON OF MEAN COMPREHENSION SCORES OF GROUPS EXPOSED TO ORGANIZED OR DISORGANIZED MATERIALS FROM SKILLED SPEAKERS

Group	N	Mean	S.E.M	<u>t</u>	Probability
Organized skilled	76	13.86	.56	.07	Greater than .50
Disorganized skilled	93	<u>13.91</u>	<u>.44</u>		
Difference		.05	.71		

Practically speaking, there is no difference shown here.

Did organization make a difference for those exposed to the unskilled speakers? Data on this question are shown in Table XI.

TABLE XI

COMPARISON OF MEAN COMPREHENSION SCORES OF GROUPS EXPOSED TO ORGANIZED OR DISORGANIZED MATERIALS BY UNSKILLED SPEAKERS

Group	N	Mean	S.E.M	<u>t</u>	Probability
Organized unskilled	69	13.61	.58	1.58	Between .50 and .10
Disorganized unskilled	75	<u>12.39</u>	<u>.50</u>		
Difference		1.22	.77		

The slight superiority of organization in this comparison is not statistically dependable.

The comparisons on organization that have just been presented are summarized in Table XII.

TABLE XII

COMPARISONS OF MEAN COMPREHENSION SCORES OF GROUPS EXPOSED TO ORGANIZED-DISORGANIZED MATERIAL UNDER DIFFERENT CONDITIONS

Group	Diff _M	<u>t</u>	Probability
Organized*			
Disorganized	.71	1.51	Between .50 and .10
Organized see			
Disorganized see	.84	1.09	Between .50 and .10
Organized hear			
Disorganized hear	.51	.98	Between .50 and .10
Organized easy			
Disorganized easy	1.11	1.63	Between .50 and .10
Organized hard			
Disorganized hard	.18	.30	Greater than .50
Disorganized skilled			
Organized skilled	.05	.07	Greater than .50
Organized unskilled			
Disorganized unskilled	1.22	1.58	Between .50 and .10

* The first item in each pair is the experimental situation which brought superior comprehension to the audience.

So far as can be known, within the limits of this experiment and the data available, each of the groups in a comparison is roughly equivalent to the other in ability as measured by the raw "L" score on the ACE Psychological test. None of the differences in mean "L" scores, for any comparison, is large enough to have a t value of 1.00.

In summary, the superiority of organization over the kind of disorganization used in this experiment is not statistically dependable, regardless of the difficulty of the material, the skill of the speaker, or the method by which the material was presented.

(2) Vocal Skill of Speaker

What effect had the vocal skill of the speaker in promoting comprehension of the prose materials used in this experiment? Data bearing on this question appear in Table XIII.

TABLE XIII

COMPARISON OF MEAN COMPREHENSION SCORES OF GROUPS
EXPOSED TO SKILLED OR UNSKILLED SPEAKERS

Group	N	Mean	S.E. _M	<u>t</u>	Probability
Skilled	156	14.17	.36	2.31	Between .05 and .02
Unskilled	144	<u>12.97</u>	<u>.38</u>		
Difference		1.20	.52		

It would appear that the vocal skill of the speaker contributed to a statistically dependable increase in comprehension. Whether or not that increase is great enough to be of real worth in a practical situation is beyond the scope of this experiment.

Again, the question might profitably be asked: "Does the comparison of totals conceal trends within the data?" An answer to this query requires an examination of secondary comparisons.

What effect had the skill of the speaker when the easy (9th-10th grade) material was used? Data on this question are shown in Table XIV.

TABLE XIV

COMPARISON OF MEAN COMPREHENSION SCORES OF GROUPS EXPOSED TO EASY MATERIAL FROM SKILLED OR UNSKILLED SPEAKERS

Group	N	Mean	S.E.M	<u>t</u>	Probability
Skilled easy	72	15.71	.52	.70	Between .50 and .10
Unskilled easy	66	<u>15.18</u>	<u>.56</u>		
Difference		.53	.76		

The slight superiority in favor of skill is not statistically dependable. Skill seemed unimportant in conveying ideas in this easy material.

What effect had skill of the speaker when the hard material (13th-15th grade) of this experiment was used? Data bearing on this question are shown in Table XV.

TABLE XV

COMPARISON OF MEAN COMPREHENSION SCORES OF GROUPS EXPOSED TO HARD MATERIAL FROM SKILLED OR UNSKILLED SPEAKERS

Group	N	Mean	S.E.M	<u>t</u>	Probability
Skilled hard	82	12.72	.45	2.61	.01
Unskilled hard	78	<u>11.10</u>	<u>.42</u>		
Difference		1.62	.62		

The difference in means is statistically dependable, though the increase of between one and two points on a thirty-item comprehension test may not be significant.

What effect had skill of the speaker when the material was organized? Data bearing on this question are shown in Table XVI.

TABLE XVI

COMPARISON OF MEAN COMPREHENSION SCORES OF GROUPS EXPOSED TO ORGANIZED MATERIALS FROM SKILLED OR UNSKILLED SPEAKERS

Group	N	Mean	S.E.M	<u>t</u>	Probability
Skilled organized	69	14.20	.58	.73	Between .50 and .10
Unskilled organized	69	<u>13.61</u>	<u>.58</u>		
Difference		.59	.82		

The slight superiority in favor of vocal skill of the speaker is not statistically dependable.

What effect had the skill of the speaker when the material was disorganized? Data bearing on this question are shown in Table XVII.

TABLE XVII

COMPARISON OF MEAN COMPREHENSION SCORES OF GROUPS EXPOSED TO DISORGANIZED MATERIALS FROM SKILLED OR UNSKILLED SPEAKERS

Group	N	Mean	S.E.M	<u>t</u>	Probability
Skilled disorganized	87	14.14	.45	2.61	.01
Unskilled disorganized	75	<u>12.39</u>	<u>.50</u>		
Difference		1.75	.67		

Here there is a statistically dependable difference between the means in favor of skill.

The comparisons on vocal skill that have just been presented are summarized in Table XVIII.

TABLE XVIII
COMPARISONS OF MEAN COMPREHENSION SCORES OF
GROUPS EXPOSED TO SKILLED-UNSKILLED SPEAKERS

Group	Diff _M	<u>t</u>	Probability
Skilled* Unskilled	1.20	2.31	Between .05 and .02
Skilled easy Unskilled easy	.53	.70	Between .50 and .10
Skilled hard Unskilled hard	1.62	2.61	.01
Skilled organized Unskilled organized	.59	.73	Between .50 and .10
Skilled disorganized Unskilled disorganized	1.75	2.61	.01

* The first item in each pair is the experimental situation which brought superior comprehension to the audience.

So far as can be known, within the limits of this experiment and the data available, each of the groups in a comparison is roughly equivalent to the other in ability as measured by the raw "L" score on the ACE Psychological test. None of the differences in mean "L" scores, for any comparison, is large enough to have a t value of 1.00.

Inspection of these results reveals that the vocally skilled speakers helped the audience to achieve higher comprehension-test scores than did the vocally unskilled speakers. This superiority is dependable at between the five and the two per cent level of confidence. The superiority of skill over lack of it did not hold for two situations, i.e., for easy material, and for organized material. However, skill appeared superior to lack of vocal skill for exposure to hard material, or to disorganized material, at the one per cent level of confidence.

(3) Difficulty of Material

What effect did difficulty of the material have upon comprehension? Data bearing on this question are shown in Table XIX.

TABLE XIX
COMPARISON OF MEAN COMPREHENSION SCORES OF
GROUPS EXPOSED TO EASY OR HARD MATERIALS

Group	N	Mean	S.E.M	<u>t</u>	Probability
Easy	226	16.47	.34	6.33	Less than .001
Hard	264	<u>13.62</u>	<u>.29</u>		
Difference		2.85	.45		

As might be expected, the easier material was grasped more completely than the hard. The difference between the means is statistically dependable and might well be considered socially significant.

However, it is desirable to go further. Does the comparison of totals conceal differences within sub-groups? Comparisons between sub-groups were made, and are reported in the following pages.

Did the difficulty of the material have any effect upon comprehension when the audience was exposed to the material by hearing it? Data bearing on this question are shown in Table XX.

TABLE XX

COMPARISON OF MEAN COMPREHENSION SCORES OF GROUPS
EXPOSED BY HEARING TO EASY OR HARD MATERIALS

Group	N	Mean	S.E.M	<u>t</u>	Probability
Easy hear	153	15.07	.37	6.41	Less than .001
Hard hear	160	<u>11.93</u>	<u>.32</u>		
Difference		3.14	.49		

The superiority for comprehension of easy material over hard is statistically dependable.

Did the difficulty of the material have any effect upon comprehension when the audience was exposed by silent reading? Data bearing on this question are shown in Table XXI.

TABLE XXI
COMPARISON OF MEAN COMPREHENSION SCORES OF GROUPS
EXPOSED BY SEEING TO EASY OR HARD MATERIALS

Group	N	Mean	S.E.M	<u>t</u>	Probability
Easy see	73	19.41	.58	3.66	Less than .001
Hard see	92	<u>16.70</u>	<u>.46</u>		
Difference		2.71	.74		

Here again the easy material was grasped more completely than the hard, by a statistically dependable difference.

Did difficulty of the material have any effect upon comprehension when the audience was exposed to skilled speakers presenting the materials? Data on this question are shown in Table XXII.

TABLE XXII

COMPARISON OF MEAN COMPREHENSION SCORES OF GROUPS EXPOSED TO EASY OR HARD MATERIALS FROM SKILLED SPEAKERS

Group	N	Mean	S.E.M	<u>t</u>	Probability
Easy skilled	77	15.60	.50	4.30	Less than .001
Hard skilled	82	<u>12.72</u>	<u>.45</u>		
Difference		2.88	.67		

Here, likewise, there is a statistically dependable difference in favor of the easy material.

What effect did difficulty of the material have when the audience heard the material from unskilled speakers? Data on this question are shown in Table XXIII.

TABLE XXIII

COMPARISON OF MEAN COMPREHENSION SCORES OF GROUPS EXPOSED TO EASY OR HARD MATERIALS FROM UNSKILLED SPEAKERS

Group	N	Mean	S.E.M	<u>t</u>	Probability
Easy unskilled	66	15.18	.56	5.83	Less than .001
Hard unskilled	78	<u>11.10</u>	<u>.42</u>		
Difference		4.08	.70		

Here, again, the difference in favor of the easy material is statistically dependable.

What effect upon the audience had difficulty of material when materials were organized? Data on this question are shown in Table XXIV.

TABLE XXIV

COMPARISON OF MEAN COMPREHENSION SCORES OF GROUPS
EXPOSED TO ORGANIZED EASY OR HARD MATERIALS

Group	N	Mean	S.E.M	<u>t</u>	Probability
Easy organized	115	17.02	.52	4.68	Less than .001
Hard organized	113	<u>13.79</u>	<u>.45</u>		
Difference		3.23	.69		

Here, also, the difference in favor of the easy material is statistically dependable.

What effect upon the audience had difficulty of the material when materials were disorganized? Data on this question are shown in Table XXV.

TABLE XXV
COMPARISON OF MEAN COMPREHENSION SCORES OF GROUPS
EXPOSED TO DISORGANIZED EASY OR HARD MATERIALS

Group	N	Mean	S.E.M	<u>t</u>	Probability
Easy disorganized	111	15.91	.43	4.25	Less than .001
Hard disorganized	151	<u>13.49</u>	<u>.37</u>		
Difference		2.42	.57		

The difference in favor of the easy material, though slightly smaller than in other comparisons in this section, is statistically dependable.

The comparisons that have just been presented on difficulty of material are summarized in Table XXVI.

TABLE XXVI

COMPARISONS OF MEAN COMPREHENSION SCORES OF GROUPS
EXPOSED TO HARD-EASY MATERIALS UNDER DIFFERENT CONDITIONS

Group	Diff _M	<u>t</u>	Probability
Easy* Hard	2.85	6.33	Less than .001
Easy hear Hard hear	3.14	6.41	Less than .001
Easy see Hard see	2.71	3.66	Less than .001
Easy skilled Hard skilled	2.88	4.30	Less than .001
Easy unskilled Hard unskilled	4.08	5.83	Less than .001
Easy organized Hard organized	3.23	4.68	Less than .001
Easy disorganized Hard disorganized	2.42	4.25	Less than .001

* The first item in each pair is the experimental situation which brought superior comprehension to the audience.

So far as can be known, within the limits of this experiment and the data available, each of the groups in a comparison is roughly equivalent to the other in ability as measured by the raw "L" score on the ACE Psychological test. None of the differences in mean "L" scores, for any comparison, is large enough to have a t value of 1.00.

Inspection of the results of these comparisons on difficulty of material reveals that in every instance the easy (9th-10th grade level) material was, as might have been expected, better comprehended than the difficult (13th-15th grade level) material. The superiority is statistically dependable at much better than the one per cent level of confidence.

(4) Mode of Presentation

What effect on comprehension of material did the mode of presentation have? Did the group exposed to material by seeing, i.e., silent reading, comprehend more than the one exposed by hearing? Data on this question are shown in Table XXVII.

TABLE XXVII

COMPARISON OF MEAN COMPREHENSION SCORES OF GROUPS
EXPOSED TO MATERIALS BY SEEING OR BY HEARING

Group	N	Mean	S.E.M	<u>t</u>	Probability
Seeing	177	17.53	.37	9.02	Less than .001
Hearing	313	<u>13.47</u>	<u>.26</u>		
Difference		4.06	.45		

The superiority of seeing over hearing is a large and statistically dependable one.

Again it is appropriate to ask, "What do the secondary comparisons reveal? Is this same superiority apparent within all of them, or are there trends which are hidden by the primary comparison?"

What effect did mode of presentation have upon comprehension when the material was easy? Data on this question are shown in Table XXVIII.

TABLE XXVIII

COMPARISON OF MEAN COMPREHENSION SCORES OF GROUPS EXPOSED TO EASY MATERIAL BY SEEING OR BY HEARING

Group	N	Mean	S.E.M	<u>t</u>	Probability
See easy	73	19.41	.58	6.29	Less than .001
Hear easy	153	<u>15.07</u>	<u>.37</u>		
Difference		4.34	.69		

The difference in favor of seeing is statistically dependable.

What effect did mode of presentation have upon comprehension when the material was hard? Data on this question are shown in Table XXIX.

TABLE XXIX

COMPARISON OF MEAN COMPREHENSION SCORES OF GROUPS EXPOSED TO HARD MATERIAL BY SEEING OR BY HEARING

Group	N	Mean	S.E.M	<u>t</u>	Probability
See hard	92	16.70	.46	8.52	Less than .001
Hear hard	160	<u>11.93</u>	<u>.32</u>		
Difference		4.77	.56		

This difference in favor of seeing is statistically dependable.

What effect had mode of presentation when comparison was made between those exposed to easy material by seeing and those exposed by hearing skilled speakers? Data on this question are shown in Table XXX.

TABLE XXX

COMPARISON OF MEAN COMPREHENSION SCORES OF GROUPS EXPOSED TO EASY MATERIAL BY SEEING OR BY SKILLED SPEAKERS

Group	N	Mean	S.E. _M	<u>t</u>	Probability
See easy	73	19.41	.58	4.74	Less than .001
Skilled easy	72	<u>15.71</u>	<u>.52</u>		
Difference		3.70	.78		

Again, the difference in favor of seeing is statistically dependable.

What effect did mode of presentation have when comparison was made between those exposed to easy material by seeing and those exposed by hearing unskilled speakers? Data on this question are shown in Table XXXI.

TABLE XXXI

COMPARISON OF MEAN COMPREHENSION SCORES OF GROUPS EXPOSED TO EASY MATERIAL BY SEEING OR BY UNSKILLED SPEAKERS

Group	N	Mean	S.E.M	<u>t</u>	Probability
See easy	73	19.41	.58	5.22	Less than .001
Unskilled easy	66	<u>15.18</u>	<u>.56</u>		
Difference		4.23	.81		

As before, the difference in favor of seeing is large and statistically dependable.

What effect did mode of presentation have when comparison was made between those exposed to hard material by seeing or by hearing skilled speakers? Data on this question are shown in Table XXXII.

TABLE XXXII

COMPARISON OF MEAN COMPREHENSION SCORES OF GROUPS EXPOSED TO HARD MATERIAL BY SEEING OR BY SKILLED SPEAKERS

Group	N	Mean	S.E.M	<u>t</u>	Probability
See hard	92	16.70	.46	6.22	Less than .001
Skilled hard	82	<u>12.72</u>	<u>.45</u>		
Difference		3.98	.64		

Here, again, the difference in favor of seeing is statistically dependable.

What effect did mode of presentation have when comparison was made between those exposed to hard material by seeing or by hearing unskilled speakers? Data on this question are shown in Table XXXIII.

TABLE XXXIII

COMPARISON OF MEAN COMPREHENSION SCORES OF GROUPS EXPOSED TO HARD MATERIAL BY SEEING OR BY UNSKILLED SPEAKERS

Group	N	Mean	S.E.M	<u>t</u>	Probability
See hard	92	16.70	.46	9.03	Less than .001
Unskilled hard	78	<u>11.10</u>	<u>.42</u>		
Difference		5.60	.62		

Here, again, the difference in favor of seeing is large and statistically dependable.

What effect did mode of presentation have when groups were exposed to organized materials? Data bearing on this question are shown in Table XXXIV.

TABLE XXXIV

COMPARISON OF MEAN COMPREHENSION SCORES OF GROUPS EXPOSED TO ORGANIZED MATERIALS BY SEEING OR BY HEARING

Group	N	Mean	S.E.M	<u>t</u>	Probability
See organized	83	18.35	.57	6.20	Less than .001
Hear organized	136	<u>14.01</u>	<u>.41</u>		
Difference		4.34	.70		

As in the previous comparisons, the difference in favor of seeing is large and statistically dependable.

What effect did mode of presentation have when groups were exposed to organized material by silent reading or by hearing the material from skilled speakers? Data on this question are shown in Table XXXV.

TABLE XXXV

COMPARISON OF MEAN COMPREHENSION SCORES OF GROUPS EXPOSED TO ORGANIZED MATERIALS BY SEEING OR BY SKILLED SPEAKERS

Group	N	Mean	S.E.M	<u>t</u>	Probability
See organized	83	18.35	.57	5.12	Less than .001
Skilled organized	69	<u>14.20</u>	<u>.58</u>		
Difference		4.15	.81		

Here, again, the difference in favor of seeing is statistically dependable.

What effect did mode of presentation have when groups were exposed to organized materials through seeing or through hearing unskilled speakers? Data on this question are shown in Table XXXVI.

TABLE XXXVI

COMPARISON OF MEAN COMPREHENSION SCORES OF GROUPS EXPOSED TO ORGANIZED MATERIALS BY SEEING OR BY UNSKILLED SPEAKERS

Group	N	Mean	S.E.M	<u>t</u>	Probability
See organized	83	18.35	.57	5.78	Less than .001
Unskilled organized	69	<u>13.61</u>	<u>.58</u>		
Difference		4.74	.82		

This difference, in favor of seeing, is also statistically dependable.

What effect did mode of presentation have when groups were exposed to disorganized materials? Data on this question are shown in Table XXXVII.

TABLE XXXVII

COMPARISON OF MEAN COMPREHENSION SCORES OF GROUPS EXPOSED TO DISORGANIZED MATERIALS BY SEEING OR BY HEARING

Group	N	Mean	S.E.M	<u>t</u>	Probability
See disorganized	81	17.27	.50	6.73	Less than .001
Hear disorganized	168	<u>13.23</u>	<u>.33</u>		
Difference		4.04	.60		

Again, the difference is in favor of seeing, and statistically dependable.

What effect did mode of presentation have when groups were exposed to disorganized materials through seeing, as contrasted with hearing skilled speakers? Data on this question are shown in Table XXXVIII.

TABLE XXXVIII

COMPARISON OF MEAN COMPREHENSION SCORES OF GROUPS EXPOSED TO DISORGANIZED MATERIALS BY SEEING OR BY SKILLED SPEAKERS

Group	N	Mean	S.E.M	<u>t</u>	Probability
See disorganized	94	16.81	.47	4.53	Less than .001
Skilled disorganized	93	<u>13.91</u>	<u>.44</u>		
Difference		2.90	.64		

This difference, though smaller than others in this section, still favors seeing, and is statistically dependable.

What effect did mode of presentation have when groups were exposed to disorganized materials through seeing, as contrasted with hearing unskilled speakers? Data on this question are shown in Table XXXIX.

TABLE XXXIX

COMPARISON OF MEAN COMPREHENSION SCORES OF GROUPS EXPOSED TO DISORGANIZED MATERIALS BY SEEING OR BY UNSKILLED SPEAKERS

Group	N	Mean	S.E. _M	<u>t</u>	Probability
See disorganized	81	17.27	.50	6.87	Less than .001
Unskilled disorganized	75	<u>12.39</u>	<u>.50</u>		
Difference		4.88	.71		

Here, again, the difference in favor of seeing is statistically dependable.

The comparisons on mode of presentation that have just been reported are summarized in Table XL.

TABLE XL
COMPARISONS OF MEAN COMPREHENSION SCORES OF GROUPS
EXPOSED TO MATERIALS BY SEEING OR BY HEARING

Group	Diff _M	<u>t</u>	Probability
Seeing* Hearing	4.06	9.02	Less than .001
See easy Hear easy	4.34	6.29	Less than .001
See hard Hear hard	4.77	8.52	Less than .001
See easy Skilled easy	3.70	4.74	Less than .001
See easy Unskilled easy	4.23	5.22	Less than .001
See hard Skilled hard	3.98	6.22	Less than .001
See hard Unskilled hard	5.60	9.03	Less than .001
See organized Hear organized	4.34	6.20	Less than .001

* The first item in each pair is the experimental situation which brought superior comprehension to the audience.

So far as can be known, within the limits of this experiment and the data available, each of the groups in a comparison is roughly equivalent to the other in ability as measured by the raw "L" score on the ACE Psychological test. None of the differences in mean "L" scores, for any comparison, is large enough to have a t value of 1.00.

TABLE XL (continued)

COMPARISONS OF MEAN COMPREHENSION SCORES OF GROUPS
EXPOSED TO MATERIALS BY SEEING OR BY HEARING

Group	Diff _M	<u>t</u>	Probability
See organized*			
Skilled organized	4.15	5.12	Less than .001
See organized			
Unskilled organized	4.74	5.78	Less than .001
See disorganized			
Hear disorganized	4.04	6.73	Less than .001
See disorganized			
Skilled disorganized	2.90	4.53	Less than .001
See disorganized			
Unskilled disorganized	4.88	6.87	Less than .001

* The first item in each pair is the experimental situation which brought superior comprehension to the audience.

So far as can be known, within the limits of this experiment and the data available, each of the groups in a comparison is roughly equivalent to the other in ability as measured by the raw "L" score on the ACE Psychological test. None of the differences in mean "L" scores, for any comparison, is large enough to have a t value of 1.00.

Inspection of these results reveals that exposure to the materials by seeing, i.e., silent reading, was always markedly superior to exposure by hearing.

(5) Correlations Between Raw "L" Scores and Comprehension Scores

Coefficients of correlation between raw "L" scores and comprehension-test scores were computed for each of the major experimental groups. These r's are shown in Table XLI.

TABLE XLI

COEFFICIENTS OF CORRELATION BETWEEN RAW "L" SCORES
AND COMPREHENSION SCORES OF MAJOR EXPERIMENTAL GROUPS

Group	Test A			Test B		
	N	<u>r</u>	S.E. <u>r</u>	N	<u>r</u>	S.E. <u>r</u>
Hearing	153	.53	.04	160	.50	.01
Seeing	73	.48	.06	104	.55	.05
Organized	115	.55	.04	113	.44	.05
Disorganized	111	.44	.05	151	.42	.05
Skilled	87	.56	.05	82	.48	.06
Unskilled	66	.51	.06	78	.54	.05
Total	226	.47	.03	264	.42	.03

These obtained r 's indicate that the relationship between the raw "L" score and the comprehension-test score is not very close. The writer cannot explain this fact, though several possibilities spring to mind. For example, the comprehension-test score and the "L" score may not measure closely related abilities. Or, motivation may have played an important part in the scores made, or the comprehension test may not be a discriminating enough instrument to use for individual measurement. Any or all of these hypotheses may account for the lack of closer relationship between raw "L" scores on the ACE Psychological test and the scores on the comprehension test.

CHAPTER V

SUMMARY AND IMPLICATIONS

I. SUMMARY

This experiment was designed to investigate the influence of four factors which might affect the communication of meaningful prose: (1) organization of material; (2) vocal skill of speaker in presentation of material; (3) difficulty of material; and (4) method of presentation, whether oral or visual.

Comparable groups of students in Grades 13 and 14 in Stockton College, Stockton, California, were exposed to two different speeches presented in different ways. The speeches were an easy and a hard one, presented in organized and disorganized forms, by silent reading, and also by vocally skilled and vocally unskilled speakers. Comprehension of the material was measured by subjects' responses to a thirty-item, multiple-choice test. Average scores for groups were then compared.

Analysis of data resulted in the findings which are enumerated below. These findings are organized under the headings of the four variables with which the experiment is concerned.

(1) Organization

1. When groups were exposed to the organized-disorganized materials of the experiment, there was no statistically dependable difference in comprehension-test means.

2. When groups were exposed by seeing, i.e., silent reading, to the organized-disorganized materials of the experiment, there was no statistically dependable difference in comprehension-test means.

3. When groups were exposed by hearing to the organized-disorganized materials of the experiment, there was no statistically dependable difference in comprehension-test means.

4. When groups were exposed to the easy speech in organized-disorganized forms, there was no statistically dependable difference in comprehension-test means.

5. When groups were exposed to the hard speech in organized-disorganized forms, there was no statistically dependable difference in comprehension-test means.

6. When groups were exposed by skilled speakers to the organized-disorganized materials of the experiment, there was no statistically dependable difference in comprehension-test means.

7. When groups were exposed by unskilled speakers to the organized-disorganized materials of the experiment,

there was no statistically dependable difference in comprehension-test means.

(2) Vocal Skill

8. When groups were exposed by skilled-unskilled speakers to the experimental materials, the difference in comprehension-test means, statistically dependable at between the two and the five per cent level of confidence, favored vocal skill.

9. When groups were exposed by skilled-unskilled speakers to the easy speech of the experiment, there was no statistically dependable difference in comprehension-test means.

10. When groups were exposed by skilled-unskilled speakers to the hard speech of the experiment, the difference in comprehension-test means, statistically dependable at the one per cent level of confidence, favored vocal skill.

11. When groups were exposed by skilled-unskilled speakers to the organized materials of the experiment, there was no statistically dependable difference in comprehension-test means.

12. When groups were exposed by skilled-unskilled speakers to the disorganized materials of the experiment, the difference in comprehension-test means, statistically dependable at the one per cent level of confidence, favored vocal skill.

(3) Difficulty of Material

13. When groups were exposed to the easy-hard materials of the experiment, the difference in comprehension-test means, statistically dependable at much better than the one per cent level of confidence, favored the easy material.

14. When groups were exposed by hearing to the easy-hard materials of the experiment, the difference in comprehension-test means, statistically dependable at much better than the one per cent level of confidence, favored the easy material.

15. When groups were exposed by seeing, i.e., silent reading, to the easy-hard materials of the experiment, the difference in comprehension-test means, statistically dependable at much better than the one per cent level of confidence, favored the easy material.

16. When groups were exposed by skilled speakers to the easy-hard materials of the experiment, the difference in comprehension-test means, statistically dependable at much better than the one per cent level of confidence, favored the easy material.

17. When groups were exposed by unskilled speakers to the easy-hard materials of the experiment, the difference in comprehension-test means, statistically dependable at much better than the one per cent level of confidence, favored

the easy material.

18. When groups were exposed to the easy-hard materials of the experiment in organized form, the difference in comprehension-test means, statistically dependable at much better than the one per cent level of confidence, favored the easy material.

19. When groups were exposed to the easy-hard materials of the experiment in disorganized form, the difference in comprehension-test means, statistically dependable at much better than the one per cent level of confidence, favored the easy material.

(4) Mode of Presentation

20. When groups were exposed to the materials of the experiment by seeing(silent reading)-hearing, the difference in comprehension-test means, statistically dependable at much better than the one per cent level of confidence, favored silent reading.

21. When groups were exposed to the easy material of the experiment by silent reading-hearing, the difference in comprehension-test means, statistically dependable at much better than the one per cent level of confidence, favored silent reading.

22. When groups were exposed to the hard material of the experiment by silent reading-hearing, the difference in

comprehension-test means, statistically dependable at much better than the one per cent level of confidence, favored silent reading.

23. When groups were exposed to the easy material of the experiment by silent reading-skilled speakers the difference in comprehension-test means, statistically dependable at much better than the one per cent level of confidence, favored silent reading.

24. When groups were exposed to the easy material of the experiment by silent reading-unskilled speakers the difference in comprehension-test means, statistically dependable at much better than the one per cent level of confidence, favored silent reading.

25. When groups were exposed to the hard material of the experiment by silent reading-skilled speakers the difference in comprehension-test means, statistically dependable at much better than the one per cent level of confidence, favored silent reading.

26. When groups were exposed to the hard material of the experiment by silent reading-unskilled speakers the difference in comprehension-test means, statistically dependable at much better than the one per cent level of confidence, favored silent reading.

27. When groups were exposed to the organized materials of the experiment by silent reading-hearing, the

difference in comprehension-test means, statistically dependable at much better than the one per cent level of confidence, favored silent reading.

28. When groups were exposed to the organized materials of the experiment by silent reading-skilled speakers, the difference in comprehension-test means, statistically dependable at much better than the one per cent level of confidence, favored silent reading.

29. When groups were exposed to the organized materials of the experiment by silent reading-unskilled speakers, the difference in comprehension-test means, statistically dependable at much better than the one per cent level of confidence, favored silent reading.

30. When groups were exposed to the disorganized materials of the experiment by silent reading-hearing, the difference in comprehension-test means, statistically dependable at much better than the one per cent level of confidence, favored silent reading.

31. When groups were exposed to the disorganized materials of the experiment by silent reading-skilled speakers, the difference in comprehension-test means, statistically dependable at much better than the one per cent level of confidence, favored silent reading.

32. When groups were exposed to the disorganized materials of the experiment by silent reading-unskilled

speakers, the difference in comprehension-test means, statistically dependable at much better than the one per cent level of confidence, favored silent reading.

(5) Miscellaneous

33. Data show no differences attributable to sex.

34. Data also show no differences between groups exposed to the materials by hearing them in an ordinary college classroom and those listening under the relatively perfect acoustical conditions in Studio A of the College of the Pacific's FM radio station, KCVN.

35. Correlations between the raw "L" scores from the ACE Psychological test and scores made on the tests of comprehension of the experimental materials are about .50. Apparently whatever the comprehension test measures is not too closely related to what the "L" score measures.

II. IMPLICATIONS

How far beyond the experimental situation can the findings of this study be extended? First of all, it is important to remember that the results reported are those of an academic investigation. Subjects were students from a public junior college, undoubtedly above the average of the population in most respects, yet probably not so much so as students in a four-year liberal arts or professional

school. The speeches, between the ninth and the fifteenth grade-level of difficulty, were detailed and mature in concept, having been intended for the ears of thoughtful men and delivered originally before above-average audiences. Each speech is of the kind that people in a democracy should hear regularly if they are to be active citizens and informed voters. The kind of disorganization used was not complete lack of organization. It was planned to approximate as nearly as possible the kind of random arrangement that might appear in a poorly prepared speech. Finally, the unskilled speakers were below the average college student in ability to read with understanding. The skilled speakers, on the other hand, were highly proficient in using the voice to convey information.

The experimenter believes that the results of this experiment are valid for many real-life situations and offer important clues for further study of the communicative process. But it is wise to assess the specific results of this investigation in terms of the four experimental variables.

(1) Organization

Theorists have long valued organization as an aid to listener comprehension; limited research has tended to support their position. In this experiment, however, the writer did not find that organization assisted the listener toward

greater comprehension.¹

Does the finding of this experiment mean, then, that organization is valueless? Not necessarily. It is a possibility that uncontrolled factors may have contaminated the results. For example, it may be that the groups exposed to the disorganized materials were stimulated by frustration to put forth additional effort to understand the speech. Investigation of this hypothesis would be a fruitful area for further study. Does everyone comprehend as much from disorganized materials as from organized ones? Or does a certain type of mind respond especially well to a random arrangement of ideas?

Perhaps, too, the present concept of organization is too restricted, or even completely mistaken. There may be patterns of arrangement radically different from what is usually called organization which are influential in aiding the mind to grasp ideas. Experimenting with organizational schemes that now appear logically and psychologically unsound may lead to modification of some traditional ideas of organization.

¹ At this point it is desirable to reiterate that, so far as the writer has been able to discover, this experiment is the most direct attempt yet made to measure the effect of organization on speech-length prose. As reported in the earlier summary of previous research, other studies have dealt with organization in short snatches of material, or have compared one pattern of organization with another.

If future experimentation should prove that organization, as presently understood, contributes nothing to listener comprehension, there would be opportunity for marked changes in techniques of communication. Perhaps lectures, sermons, speeches, sales talks, presentations for radio broadcasts, and the like would not need the very careful organization which has been considered necessary. Someone who knows his field thoroughly could, in impromptu and unorganized remarks, present information which his audience would comprehend as well as if he had spent hours in a painstaking organization and preparation of the material. A preacher, wishing to inform his congregation on the doctrines or policies of the church, would find his impromptu discussion sufficient for the purpose. A college professor might wander at will about the subject for the day's lecture, without bothering to organize his thoughts. Indeed, this lack of organization might stimulate an audience to make some active effort towards arranging the material presented, and thus work towards more comprehension than would very careful organization.

(2) Vocal Skill of the Speaker

Rhetoricians have considered the vocal skill of the speaker an aid to comprehension, and research has supported their belief. Results of this experiment confirm that

position in general. When the speech was hard (13th-15th grade-level) and when the material was disorganized, vocal skill brought about more listener comprehension. When the material was easy and when it was organized, vocal skill did not appear to make any contribution. It would seem, then, that when the listener could comprehend the material fairly easily, vocal skill of the speaker was not necessary. However, when the listener needed assistance with difficult or disorganized material, he profited from the vocal skill of the speaker.

The differences in listener comprehension of difficult or disorganized material brought about by vocal skill of the speaker cannot, however, be dismissed too lightly. Accurate appraisal must include a consideration of level of understanding of the material. If vocal skill of the speaker lifted the listener's comprehension of the material from a misusable or mistaken understanding to a usable one, then the importance of vocal skill must not be underestimated. Further inquiry into this point, which is outside the scope of this experiment, is desirable.

Certainly much additional research is needed before there can be a valid analysis of when, how, why, and to what extent vocal delivery skills are effective for listener comprehension. Workers in the field of radio and television should be especially interested in learning whether or not the emphasis put upon mellifluous tones and

super-smooth delivery for speakers is necessary to insure comprehension of spoken matter. It may be that the skillful speaker is needed only to present the difficult and disorganized material. (Let the engineer mumble the rest!)

(3) Difficulty of Material

The subjects in this experiment comprehended about ten per cent less of the hard material than they did of the easy material. Since that comprehension was not at the top level, i.e., the subjects did not completely comprehend even the easy material, the loss of about ten per cent of comprehension somewhere along the middle of the scale may be much greater in significance than at first appears. If the loss occurs at the point where it drops the listener comprehension below the usable level, or--even worse--into a level where the listener still thinks he has usable understanding but actually has dangerous misconceptions, then the importance of the percentage loss may be completely out of proportion to its size. This question, which is not within the area of this study, deserves further investigation.

That the listeners always comprehended the easy speech better than the hard speech may merely confirm the findings of the Dale-Chall readability formula and the writer's subjective rating of the proportion of the concrete and abstract ideas in the two speeches. It would seem,

however, that there should have been more difference between scores than appeared. Perhaps Vernon's findings² that content or interestingness is a much more important factor than style may explain why the easy speech was comprehended only a little more than the hard one. Possibly the listeners found the hard speech more interesting than the easy one.

(4) Mode of Presentation (Hearing-Silent Reading)

According to recent research, easy material is comprehended more effectively through hearing, while hard material is better grasped through silent reading. The writer would judge that, in some of the research situations referred to, the easy speech of this experiment would have been classified as hard. If that be so, then the results of this experiment, showing the superiority of silent reading for comprehension, coincide with those of previous research.

Of great importance, the writer believes, is the finding that subjects who read the material for themselves always comprehended it more thoroughly than those who heard it. It is through their ears that many people receive the bulk of their information about what is happening in the world. Yet, what if those who hear do not comprehend? The opinions they form, the judgments upon which they act, may

² Vernon, op. cit., passim.

be partially or wholly mistaken because the listeners did not really grasp what they heard.

Even though people may often listen less comprehendingly than they read, even though the skill of the speaker may not always aid listener comprehension, and even though organization may not add any apparent value, the solution to the problem of communication does not necessarily lie in having skilled speakers present only that which is very simple, and letting people read everything else. It may be that people should learn to listen more efficiently. Perhaps speech courses should include work in helping students learn to listen more understandingly. Listening with comprehension may be fully as important in a democracy as speaking with clarity. Perhaps the specious promises of a demagogue will not easily mislead a people trained to listen with comprehension.

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APPENDIXES

APPENDIX 1

Boighley
October 1949

Test A

You are being asked to take part in an experiment. Although this will not affect your speech grade in any way, please do your best.

Please do not turn this page until you are asked to do so. Then read at your normal rate. It will be fast enough to finish in the time allowed. When you finish before the time is up, you may re-read the material.

There will be a multiple-choice test on the text.

Please do not make any marks on these pages.

BASIC PRINCIPLES OF CANADIAN FOREIGN POLICY

Relations with Commonwealth and United States

By I. Norman Smith, Associate Editor,
The Ottawa Journal, Ottawa, Canada

Delivered at the University of Colorado,
Boulder, Colorado, May 12, 1949

May I begin simply by expressing my delight and amazement at your curiosity and your long reach. When I told friends and government people at home that this University had asked to hear a talk about Canadian foreign policy they were genuinely pleased. That you should have reached all the way to Ottawa for your speaker flatters me as much as it frightens me -- and that is considerable.

I presume your selection of a newspaperman to make this talk means that you want it done in broad general strokes and reasonably matter-of-fact. If you'd wanted a learned analysis of details you'd have chosen an expert from what you'd call our State Department. If you'd wanted an inspiring call-to-arms in defense of our common ideals you'd have chosen one of our orator-statesmen.

Comforted by the knowledge, therefore, that I may stay within my limitations and pretend neither to erudition nor oratory -- I shall go ahead as simply as I may.

First, let's understand that by foreign policy I do not mean a definite course of action plotted out by Canada as to what will be done in any given set of circumstances. We don't have blueprints of long term strategy like that. Nor do you. We don't need to wonder why. It is one of the glories and weaknesses of democracies. Our policies are to look at things when they come up and act on them as our people decide.

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When I speak of Canada's foreign policy, then, I mean rather a broad political sagacity or prudent conduct which has been created by our history, by our geography, by our economics and by our ideals and aspirations. These factors will combine to determine our decisions. If we examine them with care we may know where we're going.

The five basic principles of Canada's foreign policy were outlined not long ago by Mr. Louis St. Laurent who was then in charge of our foreign policy and is now our Prime Minister.

The first was that our foreign policies should not destroy our unity. No policy could be regarded as wise which divided the people whose effort and resources must put it into effect. This applied not only to our joint French-English culture but to sectionalism or regionalism of any kind. A disunited Canada could play

no prosperous or helpful role in world affairs.

The second basic principle was the preservation of our political liberty, an inheritance from our French and English background. We distrust and dislike governments which rule by force and suppress free comment. We know that stability is lacking where consent is absent. Moreover, we have learned that a threat to political liberty anywhere is a threat to our own way of life.

The third basic principle was respect for the rule of law in national and international affairs. The first great victory on the road to freedom was the establishment in early modern times of the principle that both governments and peoples were subject to the impartial administration of the courts. Canada has shown always a concrete willingness to accept a broadening of this principle that would create international law, international tribunals and international arbitration. It is still a distant goal, but Canadians are ready to sacrifice a measure of sovereignty to its attainment.

The fourth principle was devotion to the values of a Christian civilization. These values lay emphasis on the importance of the individual, on the place of moral principles in the conduct of human relations, on standards of judgment which transcend mere material well-being. These need no elaboration to an audience such as this.

The fifth and last principle was the acceptance of international responsibility in keeping with our conception of our role in world affairs. We are convinced that security for Canada lies in the development of a firm structure of international organization. I hope to show you a little later on that particularly in this principle are we prepared to practice what we preach.

* * * *

. . . Suppose we examine now whether Canada has been carrying her weight in the economic task of helping war-torn Europe. Your country has done the giant job in this realm, but perhaps because our figures are so small in comparison we've been overlooked.

During the war the Canadian government provided assistance to its allies to a total amount of four billion six hundred million dollars. Of this about one billion four hundred million took the

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During the war the Canadian government provided assistance to its allies to a total amount of four billion six hundred million dollars. Of this about one billion four hundred million took the form of loans or their equivalent and the balance of three billion two hundred million was provided by way of gift and Mutual Aid. The latter was to all intents and purposes the same thing as Lend-Lease. Canada did not receive any assistance of this character from the United States.

Post war assistance for relief and reconstruction of countries whose economic position was seriously damaged by the war amounted to one billion eight hundred and fifty million dollars to the end of 1948. This took the form largely of long term loans to the United Kingdom and other European countries, but in addition there were certain loans to non-European countries and contributions to

UNRRA, military relief, special relief funds, and things of that kind.

Let's not bother comparing the economic aid that you and we extended during war time. We both did pretty generously and I believe about comparably. Besides I am not aware that Americans took sly digs at our war effort; on the contrary, we won your praise and loved it.

But our post-war economic aid to Europe, China and elsewhere has not been generally recognized. In February of 1948 for example the Arizona Daily Star wondered editorially why Canada should be placed on a sort of international W. P. A. by the taxpayers of the United States. Walter Lippmann, I'm glad to say, answered it quite smartly. Mr. Lippmann wrote: "The truth is that man for man, family for family, taxpayer for taxpayer, the Canadians have borne a heavier part of the burden of European recovery than we have." He gave statistics to show that on a per capita basis we had given up to that time perhaps twice as much.

If the Arizona paper had been the only voice raised in this manner, I'd not have bothered you with it. The criticism crops up often. In March 25 of this year -- less than two months ago -- the Miami Herald wondered out loud how it was Canada was able to reduce her taxes. After wondering it gave its readers this answer: "Canada has not taken on the job of rehabilitating the world. Canada was not the arsenal of democracy for World War II... Canada saves its money, hoards its dollars. We give them away by the billions."

I don't know whether Walter Lippmann answered Miami. Mr. Lippmann cannot be expected to care for all our fan mail. But may I say that our figure of one billion eight hundred and fifty million dollars of aid for the last three years stands beside your contribution of fifteen billion seven hundred million dollars in the same period. If we compare by populations we should multiply our figure by 12. That would have us giving twenty-two billion two hundred million dollars against your fifteen billion seven hundred million dollars. If we compare on a basis of national income, which is more

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I am not happy to appear in this boastful manner. We know well that though we are not doing badly comparatively it is your aid and your broad-mindedness that is keeping Western Europe alive today and helping the United Kingdom through its time of dark travail and dull austerity. I have spoken as I have only to complete the record to support some of the high-sounding principles of our foreign policy that I may have bored you with earlier. For if you want to know about Canada's foreign policy you want to see how it works not merely hear how it sounds.

* * * *

The North Atlantic Treaty is designed against aggression, but

we know pretty well that aggression these days is likely to come from only one quarter. Similarly, the economic aid your country and mine have been sending to Europe has been sent not merely to help war-torn countries to rebuild but to assist them in their continuing struggle against Communism from within and without.

You may therefore like to know where our country stands with regard to Communism. I quote to you the highest authority in our land, Prime Minister St. Laurent. He has said:

"Totalitarian communist aggression constitutes a direct and immediate threat to every democratic country, including Canada. It endangers our freedom and our peace. It puts in jeopardy the values and virtues of the civilization of Western Christendom of which we are heirs and defenders. We have seen the Bolsheviks create in Russia the most omnipotent and pervasive state in history. We have seen them take over what was the worst feature of the Czarist regime, the secret police, and expand it. The Soviet Government, though proclaimed by Communist parties to be the champion of the oppressed, is itself an oppressor on a scale surpassing even Nazi Germany. It has demonstrated to us that the goal of social justice can never be reached by the Communistic methods of terror and violence. The things that divide the democratic parties of the free nations are as nothing compared with the gulf that separates them all from the Communists and the regimenting totalitarians."

And further, last Armistice Day Mr. St. Laurent declared in a nation-wide broadcast:

"It is no secret that the leaders of the Soviet Union aspire to world domination. By demonstrating that the free nations are taking the measures necessary to defend themselves and to ensure respect for the principles of the UN charter, the free nations may well convince the Soviets that it would be impossible for them to win a war if they started one. Now no one is likely to start a war with the prospect of losing it."

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I think that reveals clearly enough where we stand with regard to Communism and with regard to Russia so long as she seeks world domination.

* * * *

And now I round into the last lap of these rather rambling remarks on Canada's foreign policy. But I have saved for it two important matters. When I am in England I am asked how come Canada is becoming so American and does that foretell that we'll leave the British family of nations. When I am in the United States I am sometimes asked why we take orders from London and pay taxes to the King and shucks why don't we cast off those binding chains and become a country of our own -- or of yours!

May I tell you first about our association with Great Britain and the other countries of the Commonwealth.

The Commonwealth of Nations evolved from the British Empire by a gradual process during the late 19th and 20th centuries. As they grew in strength the larger colonies vigorously asserted their right to self government, which the British Government conceded step by step. Yet the more independent we became the more devoted we seemed to grow to British principles, and the more inspired we became by the thought that the Commonwealth team was neither a bad thing for its own members nor for the world at large. It meant freedom and democracy and rule of law.

Today the Commonwealth is composed of eight politically independent countries: the United Kingdom, Canada, Australia, New Zealand, South Africa, India, Pakistan, Ceylon. They are bound by no formal agreement but only by ties of friendship and common interest. Their relationship was officially defined in London in 1926 as follows: they are "autonomous communities... equal in status, in no way subordinate one to another in any aspect of their domestic or foreign affairs, though united by a common allegiance to the Crown and freely associated as members of the British Commonwealth of Nations." This position was given legal effect in 1931 by the Statute of Westminster, drawn up by the countries concerned in recognition of the changes that had gradually taken place.

And since 1931 there have been further "loosenings." The term British Commonwealth has largely given place to Commonwealth of Nations (for who can say India or South Africa are British?). Ireland has gone her way into the world, remaining friends but not a commonwealth country. But as one country stepped out another has come in, Ceylon having assumed full Dominion status and independence. And only last month the Commonwealth Prime Ministers assembled in London reached unanimous agreement that India could and would remain in the Commonwealth though a new and independent republic. India accepted the King as "the symbol of the free association of the Commonwealth's independent member nations and as such the head of the Commonwealth." Thus the "free and equal" composition of the Commonwealth becomes, if I may be flipprant, freer and equaler -- and yet stronger for that very reason.

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And so, Mr. Chairman, Canada is not "under" the United Kingdom. We make our own laws, sign our own treaties. We have a Governor General in Canada who represents the King on the recommendation of our own Prime Minister. His position is one of dignity and influence, he completes our parliamentary-crown system of government. But he has no power to command and he governs nothing.

The countries of the Commonwealth are financially independent of one another, cannot be taxed by anybody else. Our trade treaties are made up just as are our trade treaties with you -- quid pro quo.

I should like to tidy up these observations on the Commonwealth by quoting from a speech made in New York by Hon. L. B. Pearson. He is now our Secretary of State for External Affairs. Mr. Pearson remarked that:

"Possibly one reason for the ignorance which still persists about our position is the fact that we achieved our independence without martial drama or drum beating. We won it fighting with, not against the British. The Fathers of our country are not Generals on horseback with drawn swords, but statesmen in frockcoats with quill pens. Possibly we should have arranged a sham battle with the British, had a mock capitulation and signed a peace treaty. However, our method, though not spectacular, has been effective."

In the light of these facts I am sure you will understand why-- to quote once more from Mr. Pearson-- "we have the sensitiveness of a debutante about our national appearance, and are inclined to get somewhat annoyed, if we are told that our colonial slip is showing."

* * * *

And now what about your country and mine, our peoples spread on either side of 3,567 miles of border and living in peace -- and natural peace -- since 1812? Goodness, it is hard to move back even for a moment or two to get ourselves in perspective. We're knit together in sentiment, habit and interest; we laugh together at Bing and Bob and wait together for the New York Philharmonic on Sundays; we know about Grady and the silo; our hockey teams beat yours to a pulp and your baseball teams murder ours; we buy your gadgets and you buy our newsprint; your depressions are ours and our good times follow yours.

The total trade that passes over our border exceeds that between any other two countries in the world. In 1947 you sold us nearly 80 percent of our total imports -- two billion dollars worth and for cash -- and that exceeded your sale to the whole of South America, exceeded your exports to the United Kingdom, France, Soviet Russia and China combined. During the same year you bought from us one billion dollars of goods, about 37 percent of our total exports. In 1948 you took 50 percent of our exports and sold us 69 percent of our imports -- the changing volume being partly dictated by the foreign exchange situation. Or, if you like to think in terms of people rather than goods -- 30,000,000 of us cross our border each

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And yet we are. We are two countries and two countries we hope to remain. Canadians do not want to become Americans and Americans have decided they will not extend their boundaries on this continent. As President Truman said in our own Parliament on June 11, 1947: We "participate on the basis of equality and the sovereignty of each is carefully respected."

But Prime Minister St. Laurent has admitted that the relationship between a great and powerful nation and its smaller neighbor is at best far from simple. It calls for constant and imaginative attention on both sides.

Our policy with regard to the United States, he has said,

embraces negotiation by arbitration and compromise to settle the problems that have arisen between us. It also includes our readiness to accept our responsibility as a North American nation in enterprises which are for the welfare of this continent. We know that peoples who live side by side on the same continent cannot disregard each other's interests.

I have already touched briefly on our cooperation with you in trade, in war effort in peace-seeking organizations such as United Nations and the North Atlantic Treaty. But we share two additional and very important common channels of action. Back in 1909 the United States and Canada set up an International Joint Commission which has successfully handled all border disputes of any type whatever. This Commission has been and is still the envy of many countries of the world.

The success of that Commission was probably in the minds of President Roosevelt and Prime Minister King when they met in Ogdensburg, August 17, 1940, and announced after a friendly talk (and a church service) the establishment of a Permanent Joint Board on Defense "to consider in the broad sense the defense of the north half of the Western hemisphere."

The Joint Defense Board went to work in two days and has not stopped working. Its war record of cooperation between our two countries is known to you. Its peace-time record, particularly of close cooperation in our North where your people and our people are together against the elements and all comers, is a frontier story of color, vigor and accomplishment. But may I assure you, in the words of one of our greatest soldiers -- General A. G. L. McNaughton -- what a peaceful law-abiding Defense Board this is:

"The Permanent Joint Board is not a combined staff and likewise in its national sections is not a rival to the Military Staffs in Washington or in Ottawa. Its strength for its special task lies in the fact that it has not been clothed with any executive responsibility. It cannot order anything, but it can suggest what needs to be done. The Board has the duty to constantly review the situation and

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Now the great thing about that kind of cooperation is that it does not require danger or crisis. Our countries work together in peace as in war. The Permanent Joint Defense Board was called "Permanent" deliberately. And on February 12, 1947, our Prime Minister and your Secretary of State announced not only that the Board was to continue its work but that agreement had been reached for cooperation in defense policies...

* * * *

Now I have told you about Canada's foreign policy with regard to the Commonwealth and to the United States. Do you still think

Beighley
Text A - p. 8

there is an unnatural division of our sentiment and well-being? We do not. We do not think so at all. We like you both and we need you both and, moreover, we believe the world needs you both and needs you both together. Our ideals and your ideals and the ideals of the people of the Commonwealth are scarcely more different than need be the beliefs and aspirations of the people on either side of the centre aisle of a church. We're going along together, and -- let us remember and be proud of this too -- we are not going along together exclusively. We are all three for the United Nations and its principles. Who shares these principles is our ally.

* * * *

This is surely the place for me to close this account of Canada's foreign policy. For though I have just summed up my references to the United States and the Commonwealth it stands naturally, or so it seems to me, as the summary to all I have been trying to tell you. Canada's foreign policy is in short that she should try to do her just bit for the common good and peace of her own people and all the people of the world, and that in doing so she remember particularly those who think with her and have stood by her and whom she is proud to stand beside. This puts us very close to you and to the Commonwealth and to the ideal and organization of the United Nations and North Atlantic Treaty. We hope and believe that if we all stand close together we will all stand in peace.

APPENDIX 2

Beighley
October 1949

Text B

You are being asked to take part in an experiment. Although this will not affect your speech grade in any way, please do your best.

Please do not turn this page until you are asked to do so. Then read at your normal rate. It will be fast enough to finish in the time allowed. When you finish before the time is up, you may re-read the material.

There will be a multiple-choice test on the text.

Please do not make any marks on these pages.

Beighley
Text B

THE OPEN MIND

Prospects for World Peace

By Robert Oppenheimer, Director,
Institute of Advanced Study, Princeton, N. J.

Delivered at the Rochester Institute of International
Affairs, Rochester, N. Y., December 11, 1948

A few weeks ago the president of a college in the prairie states came to see me. Clearly, when he tried to look into the future, he did not like what he saw: the grim prospects for the maintenance of peace, for the preservation of freedom, for the flourishing and growth of the humane values of our civilization. He seemed to have in mind that it might be well for people, even in his small college, to try to take some part in turning these prospects to a happier end; but what he said came as rather a shock. He said, "I wonder if you can help me. I have a very peculiar problem. You see, out there, most of the students, and the teachers too, come from the farm. They are used to planting seed, and then waiting for it to grow, and then harvesting it. They believe in time and in nature. It is rather hard to get them to take things into their own hands." Perhaps, as much as anything, my theme tonight will have to do with enlisting time and nature in the conduct of our international affairs: in the quest for peace and a freer world. This is not meant mystically, for the nature which we must enlist is that of

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To such difficult questions one speaks not at all, or very modestly and incompletely. If there are indeed answers to be found, they will be found through many diverse avenues of approach -- in the European Recovery Program, in our direct relations with the Soviet States, in the very mechanisms by which our policies are developed and determined. Yet you will not find it inappropriate that we fix attention on one relatively isolated, yet not a typical, area of foreign affairs -- on atomic energy. It is an area in which the primary intent of our policy has been totally frustrated. It is an area in which it is commonly recognized that the prospects for success with regard to this primary intent are both dim and remote. It is an area in which it is equally recognized that this failure will force upon us a course of action in some important respects inconsistent with our original purposes. It is an area in which the

take pride, have nevertheless not managed quite to quiet the uneasy conscience, nor to close the mind to further trouble.

The history of our policy and our efforts toward international atomic control is public; far more important, it has from the first aroused widespread interest, criticism and understanding, and has been the subject of debates in the Congress and the press, and among our people. There may even be some notion of how, if we had the last years to live over again, we might alter our course in the light of what we have learned, and some rough agreement as to the limits within which alternative courses of action, if adopted at a time when they were still open to us, could have altered the outcome. The past is in one respect a misleading guide to the future: it is far less perplexing.

Certainly there was little to inspire, and nothing to justify, a troubled conscience in the proposals that our government made to the United Nations, as to the form which the international control of atomic energy should take. (The essential elements of these proposals were: (1) the internationalization of the key activities in the field of atomic energy, (2) the complete abolition of secrecy, (3) the prohibition of national or private activities in fields menacing to the common security, (4) the intensification of cooperation between nations in research, development and exploitation, and (5) the abrogation of the right of veto, both in the management of the affairs of the international development authority, and in the determination of transgression against the covenant.) These proposals, and some detailed means for implementing them, were explored and criticized, elaborated, and recommended for adoption by fourteen of the seventeen member nations who served on the United Nations Atomic Energy Commission. They were rejected as wholly unacceptable, even as a basis for further discussion, by the three Soviet States, whose contributions to policy and to debate have throughout constituted for us a debasingly low standard of comparison.

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This September, the Commission made its third, and what it thought its final, report to the General Assembly, meeting in Paris. It recommended to the Assembly that the general outlines of the proposed form of international control be endorsed, that the inadequacy of the Soviet counter-proposals be noted, and that the Commission itself be permitted to discontinue its work pending either a satisfactory prior negotiation between the permanent members of the Security Council and Canada, or the finding by the General Assembly that the general political conditions which had in the past obstructed progress had been so far altered that agreement now appeared possible. The Assembly did in fact accept all the recommendations but one. It asked the Commission to continue meeting. In its instructions to the Commission, however, the Assembly failed to provide affirmative indications of what the Commission was to do, or to express any confidence in the success of its further efforts; in fact, one might dismiss this action as no more than an indication of unwillingness on the part of the Assembly to accept as permanent the obvious past failures of the Commission to fulfill its mandate.

Yet we may recognize that more is involved in this action, that we will come to understand in the measure in which the nature and purposes of our own pre-occupation with the problem become clearer. In part at least the Assembly asked that this problem of the atom not be let lapse because it touches in a most intimate, if sometimes symbolic, way the profoundest questions of international affairs; because the Assembly wished to reaffirm that these problems could not be dismissed, that these issues could not be lost, whatever the immediate frustrations and however obscure the prospects. The Assembly was in fact asking that we let time and nature, and human reason and good example as a part of that nature, play some part in fulfilling the age-old aspirations of man for preserving the peace.

In any political action, and surely in one as complex and delicate as the international act and commitment made by the United States with regard to atomic energy, far more is always involved than can or should be isolated in a brief analysis. Despite all hysteria, there is some truth to the view that the steps which we took with regard to atomic energy could be understood in terms of the terror of atomic warfare. We have sought to avert this; we have further sought to avert the probable adverse consequences of atomic armament for our own institutions and our freedom. Yet more basic and more general issues are involved, which, though symbolized and rendered critical by the development of atomic energy, are in their nature not confined to it; they pervade almost all the key problems of foreign policy. If we are to seek a clue to the troubled conscience with which we tend to look at ourselves, we may, I think, find it just in the manner in which we have dealt, in their wider contexts, with these basic themes.

The first has to do with the role of coercion in human affairs; the second with the role of openness. The atomic bomb, born of a way of life, fostered throughout the centuries, in which the role of coercion was perhaps reduced more completely than in any other human activity, and which owed its whole success and its very existence to the possibility of open discussion and free inquiry, appeared in a strange paradox, at once a secret, and an unparalleled instrument of coercion.

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These two mutually interdependent ideals, the minimization of coercion and the minimization of secrecy, are, of course, in the nature of things, not absolute; any attempt to erect them as absolute will induce in us that vertigo which warns us that we are near the limits of intelligible definition. But they are very deep in our ethical as well as in our political traditions, and are recorded in earnest, eloquent simplicity in the words of those who founded this nation. They are in fact inseparable from the idea of the dignity of man to which our country, in its beginnings, was dedicated, and which has proven the monitor of our vigor and of our health. These two ideals are closely related, the one pointing toward persuasion as the key to political action, the other to free discussion and knowledge as the essential instrument of persuasion. They are so deep within us that we seldom find it necessary, and perhaps seldom possible, to talk of them. When they are challenged by

tyranny abroad or by malpractice at home, we come back to them as the wardens of our public life -- as for many of us they are as well wardens of our lives as men.

In foreign affairs, we are not unfamiliar with either the use or the need of power. Yet we are stubbornly distrustful of it. We seem to know, and seem to come back again and again to this knowledge, that the purposes of this country in the field of foreign policy cannot in any real or enduring way be achieved by coercion.

We have a natural sympathy for extending to foreign affairs what we have come to learn so well in our political life at home: that an indispensable, perhaps in some ways the indispensable, element in giving meaning to the dignity of man, and in making possible the taking of decision on the basis of honest conviction, is the openness of men's minds, and the openness of whatever media there are for communion between men, free of restraint, free of repression, and free even of that most pervasive of all restraints, that of status and hierarchy.

In the days of the founding of this republic, in all of the eighteenth century which was formative for the growth and the explicit formulation of our political ideals, politics and science were of a piece. The hope that this might in some sense again be so, was stirred to new life by the development of atomic energy. In this it has throughout been decisive that openness, openness in the first instance with regard to technical problems and to the actual undertakings underway in various parts of the world, was the one single essential precondition for a measure of security in the atomic age. Here we met in uniquely comprehensible form the alternatives of common understanding, or of the practices of secrecy and coercion.

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In all this I pretend to be saying nothing new, nothing that has not been known to all thoughtful men since the days of Hiroshima; yet it has seldom come to expression; it has been overlaid with other pre-occupations, perhaps equally necessary to the elaboration of an effective international control, but far less decisive in determining whether such a control could exist. It is just because it has not been possible to obtain assent, even in principle, even as an honest statement of intent or purpose, to these basic theses that the deadlock in attempting to establish control has appeared so serious, so refractory, and so enduring.

These words have an intent quite contrary to the creation of a sense of panic or of doom. Yet we need to start with the admission that we see no clear course before us that would persuade the governments of the world to join with us in creating a more and more open world, and thus to establish the foundation on which persuasion might so largely replace coercion in determining human affairs. We ourselves have acknowledged this grim prospect, and responded by adopting some of the very measures that we had hoped might be universally renounced. With misgivings -- and there ought to be misgivings -- we are rearming, arming atomically, as in other fields.

With deep misgivings, we are keeping secret not only those elements of our military plans, but those elements of our technical information and policy, a knowledge of which would render us more subject to enemy coercion and less effective in exercising our own. There are not many men who see an acceptable alternative to this course, although there apparently are some who would regard it as a proof of the shallowness and insincerity of our earlier renunciation of these ways. But whether, among our own people or among our friends abroad or even among those who are not our friends, these measures which we are taking appear excessive, or on the whole insufficient, they must have at least one effect. Inevitably they must appear to commit us to a future of secrecy, of coercion, and to an imminent threat of war. It is true that one may hear arguments that the mere existence of our power, quite apart from its exercise, may turn the world to the ways of openness and of peace. Yet we have today no clear, no formulated, no in some measure credible account of how this may come about. We have chosen to read, and perhaps we have correctly read, our past as a lesson that a policy of weakness has failed us. But we have not read the future as an intelligible lesson that a policy of strength can save us.

When the time is run, and that future become history, it will be clear how little of it we today foresaw or could foresee. How then can we preserve hope and sensitiveness which could enable us to take advantage of all that it has in store? Our problem is not only to face the somber and the grim elements of the future, but to keep them from obscuring it.

Our recent election has seemed to touch this deep sense of the imponderable in the history of the future, this understanding that we must not preclude the cultivation of any unexpected, hopeful turnings. Immediately after the election people seemed stirred, less even by the outcome itself, than by the element of wonder; they would tend to say things like: "Well, after this perhaps we need not be so sure that there will be a war." This sense that the future is richer and more complex than our prediction of it, and that wisdom lies in sensitiveness to what is new and hopeful, is perhaps a sign of some maturity in politics.

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The problem of doing justice to the implicit, the imponderable, and the unknown is of course not unique to politics. It is always with us in science, it is with us in the most trivial of personal affairs and it is one of the great problems of writing and of all forms of art. The means by which it is solved is sometimes called style. It is style which complements affirmation with limitation and with humility; it is style which makes it possible to act effectively, but not absolutely; it is style which, in the domain of foreign policy, enables us to find a harmony between the pursuit of ends essential to us, and the regard for the views, the sensibilities, the aspirations of those to whom the problem may appear in another light; it is style which is the deference that action pays to uncertainty; it is above all style through which power defers to reason.

We need to remember that we are a powerful nation.

We need to remember that when the future that we can now foresee deviates so markedly from all that we hope and all that we value, we can, by our example, and by the mode and the style with which we conduct our affairs, let it be apparent that we have not abandoned those hopes nor forsaken those values; we need to do this even while concrete steps, to which we resort to avert more immediate disaster, seem to negate them.

Our past is rich in example. In that other agony, the civil war, where the foundations of our government were proven and reaffirmed, it was Lincoln who again and again struck true the balance between power and reason. By 1863, the war and the blockade had deepened the attrition of the South. They had also stopped the supplies of cotton to the English mills. Early that year Lincoln wrote a letter to the working men of Manchester. He wrote:

". . . It is not always in the power of governments to enlarge or restrict the scope of moral results which follow the policies that they may deem it necessary for the public safety from time to time to adopt.

"I have understood well that the duty of self-preservation rests solely with the American people; but I have at the same time been aware that favor or disfavor of foreign nations might have a material influence in enlarging or prolonging the struggle with disloyal men in which the country is engaged. A fair examination of history has served to authorize a belief that the past actions and influences of the United States were generally regarded as having been beneficial toward mankind. I have, therefore, reckoned upon the forbearance of nations. . . ."

Fifteen months later, a year before Lincoln's death, the battle had turned. He could say:

". . . When the war began, three years ago, neither party, nor any man, expected it would last till now. Each looked for the end in some way, long ere today. Neither did any anticipate that domestic slavery would be much affected by the war. But here we are; the war has not ended, and slavery has been much affected -- how

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"But we can see the past, though we may not claim to have directed it; and seeing it, in this case, we feel more hopeful and confident for the future. . . ."

In such magnanimity even Grant, at Appomattox a year later, looking beyond the bitter slaughter, looking to nature and to time, could speak to Lee: His troops were to keep their horses; they would need them for the Spring plowing.

Each of us, recalling our actions in these last critical years,

Beighley
Text B - p. 7

will be able to find more than one instance where, in the formulation or implementation of policy, we have been worthy of this past. Each of us will mourn the opportunities that may seem to him lost, the doors once open and now closed. Not even in critical times can the sense of style, the open mind, be fostered by issuing directives; nor can they rest wholly on soliciting great actions not yet taken, great words not yet spoken. If they were wholly a matter for one man, all could well rest on his wisdom and his sensitiveness -- they neither are, nor can, nor should be. The spirit in which our foreign affairs are conducted will in the large reflect the understanding and the desires of our people; and their concrete, detailed administration will necessarily rest in the hands of countless men and women, officials of the government, who constitute the branches of our foreign service, of our State Department, and of the many agencies which now supplement the State Department, at home and abroad. The style, the perceptiveness, the imagination and the open-mindedness with which we need to conduct our affairs can only pervade such a complex of organizations, consisting inevitably of men of varied talent, taste and character, if it is a reflection of a deep and widespread public understanding. That is why, despite their sketchiness, it has seemed appropriate to present these views to a group of interested and devoted citizens. It is in our hands to see that the hope of the future is not lost, because we were too sure that we knew the answers, too sure that there was no hope.

APPENDIX 3

Beighley
October 1949

Text AA

You are being asked to take part in an experiment. Although this will not affect your speech grade in any way, please do your best.

Please do not turn this page until you are asked to do so. Then read at your normal rate. It will be fast enough to finish in the time allowed. When you finish before the time is up, you may re-read the material.

There will be a multiple-choice test on the text.

Please do not make any marks on these pages.

Beighley

Text AA

BASIC PRINCIPLES OF CANADIAN FOREIGN POLICY

Relations with Commonwealth and United States

By I. Norman Smith, Associate Editor,
The Ottawa Journal, Ottawa, Canada

Delivered at the University of Colorado,
Boulder, Colorado, May 12, 1949

The success of that Commission was probably in the minds of President Roosevelt and Prime Minister King when they met in Ogdensburg, August 17, 1940, and announced after a friendly talk (and a church service) the establishment of a Permanent Joint Board on Defense "to consider in the broad sense the defense of the north half of the Western hemisphere."

Today the Commonwealth is composed of eight politically independent countries: the United Kingdom, Canada, Australia, New Zealand, South Africa, India, Pakistan, Ceylon. They are bound by no formal agreement but only by ties of friendship and common interest. Their relationship was officially defined in London in 1926 as follows: they are "autonomous communities... equal in status, in no way subordinate one to another in any aspect of their domestic or foreign affairs, though united by a common allegiance to the Crown and freely associated as members of the British Commonwealth of Nations." This position was given legal effect in 1931 by the Statute of Westminster, drawn up by the countries concerned in recognition of the changes that had gradually taken place.

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And yet we are. We are two countries and two countries we hope to remain. Canadians do not want to become Americans and Americans have decided they will not extend their boundaries on this continent. As President Truman said in our own Parliament on June 11, 1947: We "participate on the basis of equality and the sovereignty of each is carefully respected."

Suppose we examine now whether Canada has been carrying her weight in the economic task of helping war-torn Europe. Your country has done the giant job in this realm, but perhaps because our figures are so small in comparison we've been overlooked.

If the Arizona paper had been the only voice raised in this manner, I'd not have bothered you with it. The criticism crops up often. In March 25 of this year -- less than two months ago -- the Miami Herald wondered out loud how it was Canada was able to reduce her taxes. After wondering it gave its readers this answer: "Canada has not taken on the job of rehabilitating the world. Canada was not the arsenal of democracy for World War II... Canada saves its money, hoards its dollars. We give them away by the billions."

Beighley
Text AA - p. 2

And now what about your country and mine, our peoples spread on either side of 3,567 miles of border and living in peace -- and natural peace -- since 1812? Goodness, it is hard to move back even for a moment or two to get ourselves in perspective. We're knit together in sentiment, habit and interest; we laugh together at Bing and Bob and wait together for the New York Philharmonic on Sundays; we know about Grady and the silo; our hockey teams beat yours to a pulp and your baseball teams murder ours; we buy your gadgets and you buy our newsprint; your depressions are ours and our good times follow yours.

I don't know whether Walter Lippmann answered Miami. Mr. Lippmann cannot be expected to care for all our fan mail. But may I say that our figure of one billion eight hundred and fifty million dollars of aid for the last three years stands beside your contribution of fifteen billion seven hundred million dollars in the same period. If we compare by populations we should multiply our figure by 12. That would have us giving twenty-two billion two hundred million dollars against your fifteen billion seven hundred million dollars. If we compare on a basis of national income, which is more logical, Canadian figures should be multiplied by 17 -- but let's not bother.

And so, Mr. Chairman, Canada is not "under" the United Kingdom. We make our own laws, sign our own treaties. We have a Governor General in Canada who represents the King on the recommendation of our own Prime Minister. His position is one of dignity and influence, he completes our parliamentary-crown system of government. But he has no power to command and he governs nothing.

This is surely the place for me to close this account of Canada's foreign policy. For though I have just summed up my references to the United States and the Commonwealth it stands, naturally, or so it seems to me, as the summary to all I have been trying to tell you. Canada's foreign policy is in short that she should try to do her just bit for the common good and peace of her own people and all the people of the world, and that in doing so she remember particularly those who think with her and have stood by her and whom she is proud to stand beside. This puts us very close to you and to the Commonwealth and to the ideal and organization of the United Nations and North Atlantic Treaty. We

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Let's not bother comparing the economic aid that you and we extended during war time. We both did pretty generously and I believe about comparably. Besides I am not aware that Americans took sly digs at our war effort; on the contrary, we won your praise and loved it.

And further, last Armistice Day Mr. St. Laurent declared in a nation-wide broadcast:

"It is no secret that the leaders of the Soviet Union aspire to world domination. By demonstrating that the free nations are taking the measures necessary to defend themselves and to ensure respect for the principles of the UN charter, the free nations may well convince the Soviets that it would be impossible for them to win a war if they started one. Now no one is likely to start a war with the prospect of

losing it."

First, let's understand that by foreign policy I do not mean a definite course of action plotted out by Canada as to what will be done in any given set of circumstances. We don't have blueprints of long term strategy like that. Nor do you. We don't need to wonder why. It is one of the glories and weaknesses of democracies. Our policies are to look at things when they come up and act on them as our people decide.

You may therefore like to know where our country stands with regard to Communism. I quote to you the highest authority in our land, Prime Minister St. Laurent. He has said:

"Totalitarian communist aggression constitutes a direct and immediate threat to every democratic country, including Canada. It endangers our freedom and our peace. It puts in jeopardy the values and virtues of the civilization of Western Christendom of which we are heirs and defenders. We have seen the Bolshevists create in Russia the most omnipotent and pervasive state in history. We have seen them take over what was the worst feature of the Czarist regime, the secret police, and expand it. The Soviet Government, though proclaimed by Communist parties to be the champion of the oppressed, is itself an oppressor on a scale surpassing even Nazi Germany. It has demonstrated to us that the goal of social justice can never be reached by the Communistic methods of terror and violence. The things that divide the democratic parties of the free nations are as nothing compared with the gulf that separates them all from the Communists and the regimenting totalitarians."

But Prime Minister St. Laurent has admitted that the relationship between a great and powerful nation and its smaller neighbor is at best far from simple. It calls for constant and imaginative attention on both sides.

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"Possibly one reason for the ignorance which still persists about our position is the fact that we achieved our independence without martial drama or drum beating. We won it fighting with, not against, the British. The Fathers of our country are not Generals on horseback with drawn swords, but statesmen in frockcoats with quill pens. Possibly we should have arranged a sham battle with the British, had a mock capitulation and signed a peace treaty. However, our method, though not spectacular, has been effective."

May I simply express my delight and amazement at your curiosity and your long reach. When I told friends and government people at home that this University had asked to hear a talk about Canadian

foreign policy they were genuinely pleased. That you should have reached all the way to Ottawa for your speaker flatters me as much as it frightens me -- and that is considerable.

Now the great thing about that kind of cooperation is that it does not require danger or crisis. Our countries work together in peace as in war. The Permanent Joint Defense Board was called "Permanent" deliberately. And on February 12, 1947, our Prime Minister and your Secretary of State announced not only that the Board was to continue its work but that agreement had been reached for cooperation in defense policies.

During the war the Canadian government provided assistance to its allies to a total amount of four billion six hundred million dollars. Of this about one billion four hundred million took the form of loans or their equivalent and the balance of three billion two hundred million was provided by way of gift and Mutual Aid. The latter was to all intents and purposes the same thing as Lend-Lease. Canada did not receive any assistance of this character from the United States.

May I tell you about our association with Great Britain and the other countries of the Commonwealth.

I presume your selection of a newspaperman to make this talk means that you want it done in broad general strokes and reasonably matter-of-fact. If you'd wanted a learned analysis of details you'd have chosen an expert from what you'd call our State Department. If you'd wanted an inspiring call-to-arms in defense of our common ideals you'd have chosen one of our orator-statesmen.

I have already touched briefly on our cooperation with you in trade, in war effort, in peace-seeking organizations such as United Nations and the North Atlantic Treaty. But we share two additional and very important common channels of action. Back in 1909 the United States and Canada set up an International Joint Commission which has successfully handled all border disputes of any type whatever. This Commission has been and is still the envy of many countries of the world.

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Since 1931 there have been further "loosenings." The term British Commonwealth has largely given place to Commonwealth of Nations (for who can say India or South Africa are British?). Ireland has gone her way into the world, remaining friends but not a commonwealth country. But as one country stepped out another has come in, Ceylon having assumed full Dominion status and independence. And only last month the Commonwealth Prime Ministers assembled in London reached unanimous agreement that India could and would remain in the Commonwealth though a new and independent republic. India accepted the King as "the symbol of the free association of the Commonwealth's independent member nations and as such the head of the Commonwealth." Thus the "free and equal" composition of the Commonwealth becomes, if I may be flippant, freer and equaler -- and yet stronger for that very reason.

But our post-war economic aid to Europe, China and elsewhere has not been generally recognized. In February of 1948 for example the Arizona Daily Star wondered editorially why Canada should be placed on a sort of international W. P. A. by the taxpayers of the United States. Walter Lippmann, I'm glad to say, answered it quite smartly. Mr. Lippmann wrote: "The truth is that man for man, family for family, taxpayer for taxpayer, the Canadians have borne a heavier part of the burden of European recovery than we have." He gave statistics to show that on a per capita basis we had given up to that time perhaps twice as much.

Comforted by the knowledge, therefore, that I may stay within my limitations and pretend neither to erudition nor oratory -- I shall go ahead as simply as I may.

I am not happy to appear in this boastful manner. We know well that though we are not doing badly comparatively it is your aid and your broad-mindedness that is keeping Western Europe alive today and helping the United Kingdom through its time of dark travail and dull austerity. I have spoken as I have only to complete the record, to support some of the high-sounding principles of our foreign policy that I may have bored you with earlier. For if you want to know about Canada's foreign policy you want to see how it works not merely hear how it sounds.

The third basic principle was respect for the rule of law in national and international affairs. The first great victory on the road to freedom was the establishment in early modern times of the principle that both governments and peoples were subject to the impartial administration of the courts. Canada has shown always a concrete willingness to accept a broadening of this principle that would create international law, international tribunals and international arbitration. It is still a distant goal, but Canadians are ready to sacrifice a measure of sovereignty to its attainment.

When I speak of Canada's foreign policy, then, I mean rather a broad political sagacity or prudent conduct which has been created by our history, by our geography, by our economics and by our ideals and aspirations. These factors will combine to determine our decisions. If we examine them with care we may know where we're going.

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And now I round into the last lap of these rather rambling remarks on Canada's foreign policy. But I have saved for it two important matters. When I am in England I am asked how come Canada is becoming so American and does that foretell that we'll leave the British family of nations. When I am in the United States I am sometimes asked why we take orders from London and pay taxes to the King and shucks why don't we cast off those binding chains and become a country of our own -- or of yours!

The fifth and last principle was the acceptance of international responsibility in keeping with our conception of our role in world affairs. We are convinced that security for Canada lies in the

development of a firm structure of international organization. I hope to show you a little later on that particularly in this principle are we prepared to practice what we preach.

The Joint Defense Board went to work in two days and has not stopped working. Its war record of cooperation between our two countries is known to you. Its peace-time record, particularly of close cooperation in our North where your people and our people are together against the elements and all comers, is a frontier story of color, vigor and accomplishment. But may I assure you, the words of one of our greatest soldiers -- General A. G. L. McNaughton -- what a peaceful law-abiding Defense Board this is:

"The Permanent Joint Board is not a combined staff and likewise in its national sections is not a rival to the Military Staffs in Washington or in Ottawa. Its strength for its special task lies in the fact that it has not been clothed with any executive responsibility. It cannot order anything, but it can suggest what needs to be done. The Board has the duty to constantly review the situation and if any of its suggestions have not been acted upon it can draw this situation to the attention of the President and the Prime Minister. In practice this has proved to be ample authority."

The countries of the Commonwealth are financially independent of one another, cannot be taxed by anybody else. Our trade treaties are made up just as are our trade treaties with you -- quid pro quo.

The five basic principles of Canada's foreign policy were outlined not long ago by Mr. Louis St. Laurent who was then in charge of our foreign policy and is now our Prime Minister.

Now I have told you about Canada's foreign policy with regard to the Commonwealth and to the United States. Do you still think there is an unnatural division of our sentiment and well-being? We do not. We do not think so at all. We like you both and we need you both and, moreover, we believe the world needs you both and needs you both to-

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I think that reveals clearly enough where we stand with regard to Communism and with regard to Russia so long as she seeks world domination.

The total trade that passes over our border exceeds that between any other two countries in the world. In 1947 you sold us nearly 80 percent of our total imports -- two billion dollars worth and for cash -- and that exceeded your sale to the whole of South America, exceeded your exports to the United Kingdom, France, Soviet Russia and

China combined. During the same year you bought from us one billion dollars of goods, about 37 percent of our total exports. In 1948 you took 50 percent of our exports and sold us 69 percent of our imports -- the changing volume being partly dictated by the foreign exchange situation. Or, if you like to think in terms of people rather than goods -- 30,000,000 of us cross our border each year. But I mustn't persist in these details. They are familiar to you. The fact is we are not divided by a borderline.

The North Atlantic Treaty is designed against aggression, but we know pretty well that aggression these days is likely to come from only one quarter. Similarly, the economic aid your country and mine have been sending to Europe has been sent not merely to help war-torn countries to rebuild but to assist them in their continuing struggle against Communism from within and without.

The Commonwealth of Nations evolved from the British Empire by a gradual process during the late 19th and 20th centuries. As they grew in strength the larger colonies vigorously asserted their right to self government, which the British Government conceded step by step. Yet the more independent we became the more devoted we seemed to grow to British principles, and the more inspired we became by the thought that the Commonwealth team was neither a bad thing for its own members nor for the world at large. It meant freedom and democracy and rule of law.

The second basic principle was the preservation of our political liberty, an inheritance from our French and English background. We distrust and dislike governments which rule by force and suppress free comment. We know that stability is lacking where consent is absent. Moreover, we have learned that a threat to political liberty anywhere is a threat to our own way of life.

In the light of these facts I am sure you will understand why -- to quote once more from Mr. Pearson -- "we have the sensitiveness of the debutante about our national appearance, and are inclined to get somewhat annoyed, if we are told that our colonial slip is showing."

In the light of these facts I am sure you will understand why -- to quote once more from Mr. Pearson -- "we have the sensitiveness of the debutante about our national appearance, and are inclined to get somewhat annoyed, if we are told that our colonial slip is showing."

The fourth principle was devotion to the values of a Christian civilization. These values lay emphasis on the importance of the individual, on the place of moral principles in the conduct of human relations, on standards of judgment which transcend mere material well-being. These need no elaboration to an audience such as this.

Post war assistance for relief and reconstruction of countries whose economic position was seriously damaged by the war amounted to one billion eight hundred and fifty million dollars to the end of 1948. This took the form largely of long term loans to the United Kingdom and other European countries, but in addition there were certain loans to non-European countries and contributions to UNRRA, military relief, special relief funds, and things of that kind.

The first was that our foreign policies should not destroy our

Beighley
Text AA - p. 8

unity. No policy could be regarded as wise which divided the people whose effort and resources must put it into effect. This applied not only to our joint French-English culture but to sectionalism or regionalism of any kind. A disunited Canada could play no prosperous or helpful role in world affairs.

Our policy with regard to the United States, he has said, embraces negotiation by arbitration and compromise to settle the problems that have arisen between us. It also includes our readiness to accept our responsibility as a North American nation in enterprises which are for the welfare of this continent. We know that peoples who live side by side on the same continent cannot disregard each other's interests.

APPENDIX 4

Beighley
October 1949

Text BB

You are being asked to take part in an experiment. Although this will not affect your speech grade in any way, please do your best.

Please do not turn this page until you are asked to do so. Then read at your normal rate. It will be fast enough to finish in the time allowed. When you finish before the time is up, you may re-read the material.

There will be a multiple-choice test on the text.

Please do not make any marks on these pages.

Beighley

Text BB

THE OPEN MIND

Prospects for World Peace

By Robert Oppenheimer, Director,
Institute of Advanced Study, Princeton, N. J.

Delivered at the Rochester Institute of International
Affairs, Rochester, N. Y., December 11, 1948

We need to remember that we are a powerful nation.

A year before Lincoln's death, the battle had turned. Lincoln could then say:

" . . . When the war began, three years ago, neither party, nor any man, expected it would last till now. Each looked for the end in some way, long ere today. Neither did any anticipate that domestic slavery would be much affected by the war. But here we are; the war has not ended, and slavery has been much affected -- how much needs not now to be recounted

"But we can see the past, though we may not claim to have directed it; and seeing it, in this case, we feel more hopeful and confident for the future. . . ."

In any political action, and surely in one as complex and delicate as the international act and commitment made by the United States with regard to atomic energy, far more is always involved than can or should be isolated in a brief analysis. Despite all hysteria, there is some truth to the view that the steps which we took with regard to atomic energy could be understood in terms of the terror of atomic warfare. We have sought to avert this; we have further sought to

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In such magnanimity even Grant, at Appomattox a year later, looking beyond the bitter slaughter, looking to nature and to time, could speak to Lee: His troops were to keep their horses; they would need them for the Spring plowing.

Our past is rich in example. In that other agony, the civil war, where the foundations of our government were proven and reaffirmed, it was Lincoln who again and again struck true the balance between

ourselves have acknowledged this grim prospect, and responded by adopting some of the very measures that we had hoped might be universally renounced. With misgivings -- and there ought to be misgivings -- we are rearming, arming atomically, as in other fields. With deep misgivings, we are keeping secret not only those elements of our military plans, but those elements of our technical information and policy, a knowledge of which would render us more subject to enemy coercion and less effective in exercising our own. There are not many men who see an acceptable alternative to this course, although there apparently are some who would regard it as a proof of the shallowness and insincerity of our earlier renunciation of these ways. But whether, among our own people or among our friends abroad or even among those who are not our friends, these measures which we are taking appear excessive, or on the whole insufficient, they must have at least one effect. Inevitably they must appear to commit us to a future of secrecy, of coercion, and to an imminent threat of war. It is true that one may hear arguments that the mere existence of our power, quite apart from its exercise, may turn the world to the ways of openness and of peace. Yet we have today no clear, nor formulated, no in some measure credible account of how this may come about. We have chosen to read, and perhaps we have correctly read, our past as a lesson that a policy of weakness has failed us. But we have not read the future as an intelligible lesson that a policy of strength can save us.

Each of us, recalling our actions in these last critical years, will be able to find more than one instance where, in the formulation or implementation of policy, we have been worthy of this past. Each of us will mourn the opportunities that may seem to him lost, the doors once open and now closed. Not even in critical times can the sense of style, the open mind, be fostered by issuing directives; nor can they rest wholly on soliciting great actions not yet taken, great words not yet spoken. If they were wholly a matter for one man, all could well rest on his wisdom and his sensitiveness-- they neither are nor can be, nor should be. The spirit in which our foreign affairs

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To these difficult questions one speaks not at all, or very modestly and incompletely. If there are indeed answers to be found,

they will be found through many diverse avenues of approach -- in the European Recovery Program, in our direct relations with the Soviet States, in the very mechanisms by which our policies are developed and determined. Yet you will not find it inappropriate that we fix attention on one relatively isolated, yet not a typical, area of foreign affairs -- on atomic energy. It is an area in which the primary intent of our policy has been totally frustrated. It is an area in which it is commonly recognized that the prospects for success with regard to this primary intent are both dim and remote. It is an area in which it is equally recognized that this failure will force upon us a course of action in some important respects inconsistent with our original purposes. It is an area in which the excellence of our proposals, and a record in which we may and do take pride, have nevertheless not managed quite to quiet the uneasy conscience, nor to close the mind to further trouble.

These two mutually interdependent ideals, the minimization of coercion and the minimization of secrecy, are, of course, in the nature of things, not absolute; any attempt to erect them as absolute will induce in us that vertigo which warns us that we are near the limits of intelligible definition. But they are very deep in our ethical as well as in our political traditions, and are recorded in earnest, eloquent simplicity in the words of those who founded this nation. They are in fact inseparable from the idea of the dignity of man to which our country, in its beginnings, was dedicated, and which has proven the monitor of our vigor and of our health. These two ideals are closely related, the one pointing toward persuasion as the key to political action, the other to free discussion and knowledge as the essential instrument of persuasion. They are so deep within us that we seldom find it necessary, and perhaps seldom possible, to talk of them. When they are challenged by tyranny abroad or by malpractice at home, we come back to them as the wardens of our public life -- as for many of us they are as well wardens of our lives as men.

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A few weeks ago the president of a college in the prairie states came to see me. Clearly, when he tried to look into the future, he did not like what he saw: the grim prospects for the maintenance of peace, for the preservation of freedom, for the flourishing and growth of the humane values of our civilization. He seemed to have in mind that it might be well for people, even in his small college, to try to take some part in turning these prospects to a happier end; but what he said came as rather a shock. He said, "I wonder if you can help me. I have a very peculiar problem. You see, out there, most of the students, and the teachers too, come from the farm. They are used to planting seed, and then waiting for it to grow, and then harvesting it. They believe in time and in nature. It is rather hard to get them to take things into their own hands." Perhaps, as much as anything, my theme tonight will have to do with enlisting time and nature in the conduct of our international affairs: in the quest for peace and a freer world. This is not meant mystically, for the nature which we must enlist is that of man; and if there is hope in it, that lies not least in man's reason. What elements are there in the conduct of foreign affairs which may be conducive to the exercise of that reason,

which may provide a climate for the growth of new experience, new insight and new understanding? How can we recognize such growth, and be sensitive to its hopeful meaning, while there is yet time, through action based on understanding, to direct the outcome?

The first has to do with the role of coercion in human affairs; the second with the role of openness. The atomic bomb, born of a way of life, fostered throughout the centuries, in which the role of coercion was perhaps reduced more completely than in any other human activity, and which owed its whole success and its very existence to the possibility of open discussion and free inquiry, appeared in a strange paradox, at once a secret, and an unparalleled instrument of coercion.

Our recent election has seemed to touch this deep sense of the imponderable in the history of the future, this understanding that we must not preclude the cultivation of any unexpected, hopeful turnings. Immediately after the election people seemed stirred, less even by the outcome itself, than by the element of wonder; they would tend to say things like: "Well, after this perhaps we need not be so sure that there will be a war." This sense that the future is richer and more complex than our prediction of it, and that wisdom lies in sensitivity to what is new and hopeful, is perhaps a sign of some maturity in politics.

Certainly there was little to inspire, and nothing to justify, a troubled conscience in the proposals that our government made to the United Nations, as to the form which the international control of atomic energy should take. (The essential elements of these proposals were: (1) the internationalization of the key activities in the field of atomic energy, (2) the complete abolition of secrecy, (3) the prohibition of national or private activities in fields menacing to the common security, (4) the intensification of cooperation between nations in research, development and exploitation, and (5) the abrogation of the right of veto, both in the management of the affairs of

Our recent election has seemed to touch this deep sense of the imponderable in the history of the future, this understanding that we must not preclude the cultivation of any unexpected, hopeful turnings. Immediately after the election people seemed stirred, less even by the outcome itself, than by the element of wonder; they would tend to say things like: "Well, after this perhaps we need not be so sure that there will be a war." This sense that the future is richer and more complex than our prediction of it, and that wisdom lies in sensitivity to what is new and hopeful, is perhaps a sign of some maturity in politics.

Certainly there was little to inspire, and nothing to justify, a troubled conscience in the proposals that our government made to the United Nations, as to the form which the international control of atomic energy should take. (The essential elements of these proposals were: (1) the internationalization of the key activities in the field of atomic energy, (2) the complete abolition of secrecy, (3) the prohibition of national or private activities in fields menacing to the common security, (4) the intensification of cooperation between nations in research, development and exploitation, and (5) the abrogation of the right of veto, both in the management of the affairs of the international development authority, and in the determination of transgression against the covenant.) These proposals, and some detailed means for implementing them, were explored and criticized, elaborated, and recommended for adoption by fourteen of the seventeen member nations who served on the United Nations Atomic Energy Commission. They were rejected as wholly unacceptable, even as a basis for further discussion, by the three Soviet States, whose contributions to policy and to debate have throughout constituted for us a debasingly low standard of comparison.

In all this I pretend to be saying nothing new, nothing that has not been known to all thoughtful men since the days of Hiroshima; yet it has seldom come to expression; it has been overlaid with other pre-occupations, perhaps equally necessary to the elaboration of an effective international control, but far less decisive in determining whether such a control could exist. It is just because it has not been possible to obtain assent, even in principle, even as an honest statement of intent or purpose, to these basic theses that the deadlock in

attempting to establish control has appeared so serious, so refractory, and so enduring.

The history of our policy and our efforts toward international atomic control is public; far more important, it has from the first aroused widespread interest, criticism and understanding, and has been the subject of debates in the Congress and the press, and among our people. There may even be some notion of how, if we had the last years to live over again, we might alter our course in the light of what we have learned, and some rough agreement as to the limits within which alternative courses of action, if adopted at a time when they were still open to us, could have altered the outcome. The past is in one respect a misleading guide to the future: it is far less perplexing.

In the days of the founding of this republic, in all of the eighteenth century which was formative for the growth and the explicit formulation of our political ideals, politics and science were of a piece. The hope that this might in some sense again be so, was stirred to new life by the development of atomic energy. In this it has throughout been decisive that openness, openness in the first instance with regard to technical problems and to the actual undertakings underway in various parts of the world, was the one single essential precondition for a measure of security in the atomic age. Here we met in uniquely comprehensible form the alternatives of common understanding, or of the practices of secrecy and coercion.

This September, the Commission made its third, and what it thought its final, report to the General Assembly, meeting in Paris. It recommended to the Assembly that the general outlines of the proposed form of international control be endorsed, that the inadequacy of the Soviet counter-proposals be noted, and that the Commission itself be permitted to discontinue its work pending either a satisfactory prior negotiation between the permanent members of the Security Council and Canada, or the finding by the General Assembly that the Commission's work was not warranted.

In the days of the founding of this republic, in all of the eighteenth century which was formative for the growth and the explicit formulation of our political ideals, politics and science were of a piece. The hope that this might in some sense again be so, was stirred to new life by the development of atomic energy. In this it has throughout been decisive that openness, openness in the first instance with regard to technical problems and to the actual undertakings underway in various parts of the world, was the one single essential precondition for a measure of security in the atomic age. Here we met in uniquely comprehensible form the alternatives of common understanding, or of the practices of secrecy and coercion.

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We have a natural sympathy for extending to foreign affairs what we have come to learn so well in our political life at home: that an indispensable, perhaps in some ways the indispensable, element in giving meaning to the dignity of man, and in making possible the taking of decision on the basis of honest conviction, is the openness of men's minds, and the openness of whatever media there are for communion between men, free of restraint, free of repression, and free even of that most pervasive of all restraints, that of status and of

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hierarchy.

When the time is run, and that future become history, it will be clear how little of it we today foresaw or could foresee. How then can we preserve hope and sensitiveness which could enable us to take advantage of all that it has in store? Our problem is not only to face the somber and the grim elements of the future, but to keep them from obscuring it.

Yet we may recognize that more is involved, that we will come to understand in the measure in which the nature and purposes of our own pre-occupation with the problem become clearer. In part at least the Assembly asked that this problem of the atom not be let lapse because it touches in a most intimate, if sometimes symbolic, way the profoundest questions of international affairs; because the Assembly wished to reaffirm that these problems could not be dismissed, that these issues could not be lost, whatever the immediate frustrations and however obscure the prospects. The Assembly was in fact asking that we let time and nature, and human reason and good example as a part of that nature, play some part in fulfilling the age-old aspirations of man for preserving the peace.

APPENDIX 5

Beighley
October 1949

Test A

DIRECTIONS

On the basis of what you have just read or heard (Not what you personally believe) please choose the correct or most nearly correct statement from the four alternatives given. Indicate your choice by carefully blackening the space between the two dotted lines on the answer sheet that bear the same letter as the choice you desire to make. Use the special pencil.

Here is a sample:

0. The President of the United States is
- a. Roosevelt
 - b. Truman
 - c. Washington
 - d. Byrnes

Since the correct answer is "Truman," and that has the letter "b" in front of it, on the answer sheet find question number 0, and blacken the space between the lines under the letter "b" like this:

a b c d

your choice by carefully blackening the space between the two dotted lines on the answer sheet that bear the same letter as the choice you desire to make. Use the special pencil.

Here is a sample:

- O. The President of the United States is
- a. Roosevelt
 - b. Truman
 - c. Washington
 - d. Byrnes

Since the correct answer is "Truman," and that has the letter "b" in front of it, on the answer sheet find question number O, and blacken the space between the lines under the letter "b" like this:

a b c d

O. || || ||

Now go on to the rest of the questions.

Please remember, answer on the basis of what you read or heard just a little while ago, not what you may personally think. Use the special pencil.

1. Which one of the following is not a member of the British Commonwealth of Nations?
 - a. India
 - b. Ceylon
 - c. Ireland
 - d. Pakistan

2. Where did President Truman say, "We participate on the basis of equality and the sovereignty of each is carefully respected?"
 - a. Congress
 - b. Press conference
 - c. Parliament
 - d. Niagara Falls centennial

3. The title of this speech is
 - a. Basic Principles of Commonwealth Foreign Policy
 - b. Basic Principles of Canadian Foreign Policy
 - c. Basic Relations between Commonwealth and Canada
 - d. Basic Relations between Canada and United Nations

4. The British Commonwealth of Nations came from the British Empire
 - a. rapidly during the 20th century
 - b. gradually during the 17th-20th centuries
 - c. gradually during the 15th-20th centuries
 - d. gradually during the 19th-20th centuries

5. How complicated is the relationship between Canada and the United States?
 - a. very complicated
 - b. very simple
 - c. of normal difficulty
 - d. a little complicated

ANSWER ON THE BASIS OF WHAT YOU READ OR HEARD JUST A LITTLE WHILE
AGO, NOT WHAT YOU MAY PERSONALLY THINK

2. Where did President Truman say, "We participate on the basis of equality and the sovereignty of each is carefully respected?"
 - a. Congress
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 - d. a little complicated

ANSWER ON THE BASIS OF WHAT YOU READ OR HEARD JUST A LITTLE WHILE AGO, NOT WHAT YOU MAY PERSONALLY THINK

6. Mr. Louis St. Laurent was, at the time of this speech,
 - a. in charge of Canada's foreign policy
 - b. Canada's prime minister
 - c. leader of Canada's opposition party
 - d. Canada's Governor-General

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7. Who are the "fathers of their country" for Canada?
 - a. churchmen with crosses
 - b. farmers with plows
 - c. statesmen with pens
 - d. pioneers with covered wagons

8. The second principle of Canada's foreign policy, political liberty, was inherited from
 - a. France and England
 - b. England and the U. S.
 - c. France and the U. S.
 - d. England

9. How much Lend-Lease aid did Canada receive from the United States?
 - a. about \$3 billion
 - b. about \$1 billion
 - c. about \$5 billion
 - d. none

ANSWER ON THE BASIS OF WHAT YOU READ OR HEARD JUST A LITTLE
WHILE AGO, NOT WHAT YOU MAY PERSONALLY THINK

10. What kind of threat did Mr. St. Laurent say that totalitarian communist aggression makes?
 - a. direct threat to all nations
 - b. direct threat to all European and American nations
 - c. direct threat to all democracies
 - d. indirect threat to all democracies

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 - France and the U. S.
 - England
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10. What kind of threat did Mr. St. Laurent say that totalitarian communist aggression makes?
- direct threat to all nations
 - direct threat to all European and American nations
 - direct threat to all democracies
 - indirect threat to all democracies
11. The countries of the Commonwealth can tax themselves, and also be taxed by
- England for war purposes only
 - England to help support the King
 - England for certain purposes, including war
 - no one else
12. Canada thinks that security for it lies in
- control of the atom bomb with the United States
 - control of the atom bomb with the other democracies
 - the United Nations
 - the United World Federalists

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13. The name of the speaker is
a. King
b. Pearson
c. Smith
d. St. Laurent
14. The first principle of Canada's foreign policy is that it should not destroy Canadian unity, except in relation to:
a. the United States
b. no exception
c. sectionalism or regionalism
d. French-English culture
15. What is the area of responsibility for the International Joint Commission?
a. monetary disputes
b. liquor disputes
c. military disputes
d. border disputes
16. To compare Canada's financial contribution to reconstruction with ours, on the basis of their national income, it is necessary to multiply theirs by
a. 12
b. 75%
c. 9
d. 17

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16. To compare Canada's financial contribution to reconstruction with ours, on the basis of their national income, it is necessary to multiply theirs by
a. 12
b. 75%
c. 9
d. 17
17. The Miami Herald criticized Canada for
a. not giving enough to Europe now
b. not giving enough to Europe during the war
c. hoarding its dollars now
d. getting Walter Lippmann to answer for her
18. How do Canada's athletic teams compare with ours?
a. about the same
b. slightly inferior
c. definitely inferior
d. much inferior

ANSWER ON THE BASIS OF WHAT YOU READ OR HEARD JUST A LITTLE WHILE AGO, NOT WHAT YOU MAY PERSONALLY THINK

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19. The speaker is a
a. State Department employe
b. orator-statesman
c. newspaperman
d. army officer
20. How many people cross the border between the United States and Canada each year?
a. 40,000,000
b. 80,000,000
c. 60,000,000
d. 30,000,000
21. The Miami Herald criticized Canada because it
a. reduced its taxes
b. raised its taxes
c. kept its taxes high
d. kept its taxes low
22. What does the Statute of Westminster, 1931, tell?
a. legal relationship of the member nations
b. religious relationship of the member nations
c. which nations owe allegiance to the crown
d. financial relationship of the member nations
23. The ideas and ideals of Canada, the United States, and Great Britain differ about as much as do the ideas of
a. Californians from Floridians
b. Republicans from Democrats
c. members in the United Nations
d. members in the same church

ANSWER ON THE BASIS OF WHAT YOU READ OR HEARD JUST A LITTLE
WHILE AGO, NOT WHAT YOU MAY PERSONALLY THINK

20. How many people cross the border between the United States and Canada each year?
- a. 40,000,000
 - b. 80,000,000
 - c. 60,000,000
 - d. 30,000,000
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 - d. members in the same church

ANSWER ON THE BASIS OF WHAT YOU READ OR HEARD JUST A LITTLE WHILE AGO, NOT WHAT YOU MAY PERSONALLY THINK

24. Approximately how many miles long is the border between the United States and Canada?
- a. 3,000
 - b. 4,000
 - c. 3,500
 - d. 4,500

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25. The fourth principle of Canada's foreign policy is devotion to the values of
- a. a Christian civilization
 - b. the British Commonwealth of Nations
 - c. free trade among all countries
 - d. cooperation with the United States

ANSWER ON THE BASIS OF WHAT YOU READ OR HEARD JUST A LITTLE WHILE AGO, NOT WHAT YOU MAY PERSONALLY THINK

26. The speaker is from
- a. Montreal, Canada
 - b. Ottawa, Canada
 - c. Vancouver, Canada
 - d. Toronto, Canada
27. If we compare Canada's financial contribution for reconstruction with ours, each Canadian, in comparison with each person in the United States, has given
- a. almost twice as much
 - b. almost half as much
 - c. about the same
 - d. almost five times as much
28. What does the speaker say the United States buys from Canada?
- a. hockey teams
 - b. food, especially wheat
 - c. newsprint
 - d. cloth, especially wool

ANSWER ON THE BASIS OF WHAT YOU READ OR HEARD JUST A LITTLE
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28. What does the speaker say the United States buys from Canada?
a. hockey teams
b. food, especially wheat
c. newsprint
d. cloth, especially wool
29. Changes in relationships among the members of the British Commonwealth of Nations are making the Commonwealth
a. get weaker
b. stay the same
c. dissolve
d. get stronger
30. This speech was delivered in
a. Boulder, Colorado
b. Ottawa, Canada
c. Montreal, Canada
d. United Nations, New York

APPENDIX 6

Beighley
Test B

October, 1949

1. The atomic bomb, made possible through free interchange of ideas and information, was a strange paradox, at once a secret, and
 - a. an instrument of coercion
 - b. a well-publicized technique
 - c. a theory well-understood by all atomic scientists
 - d. a mechanism for peace

2. The atomic-energy course that we have now chosen indicates a future
 - a. with great hope for peace soon
 - b. with an imminent threat of war
 - c. with great hope for peace eventually
 - d. with talk of war, but no war

3. The action of the General Assembly really meant that
 - a. time and nature had played their parts and failed to achieve peace among men
 - b. time and nature had failed; the Commission must try some other method
 - c. although this problem is of utmost importance, solution must be found in another area
 - d. time and nature should be allowed to play their parts toward achieving peace among men

ANSWER ON THE BASIS OF WHAT YOU READ OR HEARD JUST A LITTLE
WHILE AGO, NOT WHAT YOU MAY PERSONALLY THINK

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 - d. time and nature should be allowed to play their parts toward achieving peace among men

ANSWER ON THE BASIS OF WHAT YOU READ OR HEARD JUST A LITTLE WHILE AGO, NOT WHAT YOU MAY PERSONALLY THINK

4. One of the two basic themes or key problems of foreign affairs is the role of coercion. What is the other?
 - a. the role of diplomacy
 - b. the role of openness
 - c. the role of economics
 - d. the role of force

5. Debate on proposals for international control of atomic energy by the opposing faction reached an
 - a. ordinary level
 - b. remarkably high level
 - c. higher than ordinary level
 - d. abominably low level

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6. This small-college president wanted his students to
- keep their philosophy of allowing time and nature to bring about results
 - lay aside their natural pessimism and become hopeful for the future
 - get results quickly by taking things into their own hands
 - become less optimistic and less ready to make startling changes

ANSWER ON THE BASIS OF WHAT YOU READ OR HEARD JUST A LITTLE WHILE AGO, NOT WHAT YOU MAY PERSONALLY THINK

7. Is the alternative to common understanding the practice of secrecy and coercion?
- yes
 - no
 - to a somewhat important extent
 - only to an unimportant extent
8. This speech was delivered at
- Massachusetts Institute of Technology Centennial, Boston
 - Rochester Institute of International Affairs, Rochester
 - Foreign Policy Association Convention, Philadelphia
 - New York Herald-Tribune Forum on international affairs
9. The spirit in which our foreign affairs are conducted depends primarily upon the
- people
 - President
 - Secretary of State
 - opposing governments

- a. yes
- b. no
- c. to a somewhat important extent
- d. only to an unimportant extent

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- a. Massachusetts Institute of Technology Centennial, Boston
 - b. Rochester Institute of International Affairs, Rochester
 - c. Foreign Policy Association Convention, Philadelphia
 - d. New York Herald-Tribune Forum on international affairs
9. The spirit in which our foreign affairs are conducted depends primarily upon the
- a. people
 - b. President
 - c. Secretary of State
 - d. opposing governments
10. When the future that we now foresee deviates so markedly from all that we hope for and value, we can make it apparent that we have
- a. forsaken old hopes for new, old values for new
 - b. not forsaken our hopes, but refashioned our values
 - c. forsaken our hopes, but clung to our values
 - d. not forsaken our hopes and values
11. Prospects for success in the area of international atomic control are commonly recognized to be
- a. relatively soon and relatively hopeful
 - b. hopeless till Stalin dies
 - c. dim and remote
 - d. remote, but hopeful

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12. For security in the atomic age, the speaker demands
 - a. an all-powerful United Nations
 - b. common understanding
 - c. use of force against possible aggressors
 - d. secrecy

13. The General Assembly accepted all the recommendations but one, and
 - a. thanked the Commission for finishing its task
 - b. asked the Commission to continue meeting
 - c. expressed confidence that the Commission could fulfill its task
 - d. gave the Commission affirmative indications of what it was to do

14. Are the two mutually interdependent ideas that the speaker discusses very important?
 - a. no
 - b. to an appreciable extent
 - c. very little
 - d. yes

15. President Truman's election moved people emotionally primarily because of their realization that
 - a. public-opinion polls are misleading
 - b. it is impossible to predict events accurately
 - c. predictions sometimes affect the events
 - d. the under-dog was able, by persistence and courage, to win

16. The purposes of this country in foreign affairs can be achieved by
 - a. persuasion
 - b. force
 - c. financial aid
 - d. sympathy

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- thanked the Commission for finishing its task
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16. The purposes of this country in foreign affairs can be achieved by
- persuasion
 - force
 - financial aid
 - sympathy
17. What was the complaint that the president of a college in the prairie states made about his students?
- they were idealists and wanted to do everything at once to improve the situation
 - they were so pessimistic they thought that conditions would never improve
 - they were content to allow improvements to come gradually and slowly over a long period of time
 - they expected results in a relatively short time after much strenuous effort

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ANSWER ON THE BASIS OF WHAT YOU READ OR HEARD JUST A LITTLE
WHILE AGO, NOT WHAT YOU MAY PERSONALLY THINK

18. In the days of the founding of this republic, and in all of the eighteenth century when our political ideas were formulated, were politics and science of a piece (of the same general principles of operation)?
 - a. yes
 - b. no
 - c. yes, to some extent
 - d. no, but they could have been
19. How many member nations of the UN Atomic Energy Commission rejected these proposals even as a basis for further discussion?
 - a. 2
 - b. 3
 - c. 5
 - d. 6
20. The element which helps to solve the unknown and imponderable in science, that makes it possible to act effectively, but not absolutely, which enables us in foreign policy to find harmony between ends essential to us and those essential to others is sometimes called
 - a. hope
 - b. religion
 - c. character
 - d. style
21. The title of this speech is
 - a. The Way to Peace
 - b. The Open Mind
 - c. The United Nations in World Affairs
 - d. United States Foreign Policy
22. The speaker thinks that if there is hope in man, it lies in his
 - a. emotion
 - b. reason
 - c. religion
 - d. politics

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23. The one single essential pre-condition for a measure of security in the atomic age is
- a. openness to knowledge of technical problems alone
 - b. openness in regard to undertakings in various parts of the world
 - c. openness to knowledge of most technical problems and most actual undertakings in various parts of the world
 - d. openness to knowledge of technical problems and actual undertakings in various parts of the world
24. The UN Atomic Energy Commission, in September, 1948, made its
- a. second and final report
 - b. third and supposedly final report
 - c. third and final report
 - d. third and tentative report
25. According to the speaker, two highly important and mutually interdependent ideas are minimization of coercion and minimization of
- a. government interference
 - b. secrecy
 - c. police power
 - d. foreign influence

ANSWER ON THE BASIS OF WHAT YOU READ OR HEARD JUST A LITTLE WHILE AGO, NOT WHAT YOU MAY PERSONALLY THINK

26. In the atomic-control area of foreign affairs, our policy thus far has been
- a. highly successful
 - b. mostly successful
 - c. somewhat successful
 - d. completely frustrated

23. The one single essential pre-condition for a measure of security in the atomic age is
- a. openness to knowledge of technical problems alone
 - b. openness in regard to undertakings in various parts of the world
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ANSWER ON THE BASIS OF WHAT YOU READ OR HEARD JUST A LITTLE WHILE AGO, NOT WHAT YOU MAY PERSONALLY THINK

26. In the atomic-control area of foreign affairs, our policy thus far has been
- a. highly successful
 - b. mostly successful
 - c. somewhat successful
 - d. completely frustrated
27. The speaker demands that we have openness of means of
- a. communication
 - b. technical production
 - c. scientific research
 - d. production of atomic energy

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28. How many member nations on the UN Atomic Energy Commission recommended acceptance of our United States proposals to the United Nations after they were explored, criticized, and elaborated upon?
- a. 5
 - b. 9
 - c. 14
 - d. 17
29. Which one of the following does NOT apply to the mutually interdependent ideals the speaker discusses?
- a. we seldom find it necessary or possible to talk of them
 - b. they are the wardens of our public and private lives
 - c. they can be exactly defined and followed implicitly
 - d. they are deep in our ethical and political traditions.
30. Our problem is to face the somber and grim elements of the future, and
- a. keep them from obscuring it
 - b. keep them from making us too pessimistic about the ultimate success of our worthy goals
 - c. keep them from destroying us
 - d. keep them from nagging us into insecurity

BE SURE YOU HAVE ANSWERED ON THE BASIS OF WHAT YOU READ OR HEARD JUST A LITTLE WHILE AGO, NOT WHAT YOU MAY PERSONALLY THINK

APPENDIX 7

TABLE XLII

COMPUTATIONS FOR DETERMINING READING LEVELS OF SPEECH A AND OF SPEECH B*

Item	Samples			
	1	2	3	4
SPEECH A				
(1) Number of words in sample	116	104	117	109
(2) Number of sentences in sample	5	8	6	5
(3) Number of words not on Dale List	26	10	21	24
(4) Average sentence length: (1) ÷ (2)	23	13	19	22
(5) Dale score: (3) ÷ (1) x 100	22	10	18	22
(6) Average sentence length (4) x .0496	1.1408	.6448	.9424	1.0912
(7) Dale score (5) x .1579	3.4738	1.5790	2.8422	3.4738
(8) Constant	3.6365	3.6365	3.6365	3.6365
(9) Formula raw score: (6) + (7) + (8)	8.2511	5.8603	7.4211	8.2015
Average raw score of four samples: 7.4335				
Average corrected grade level: 9th-10th grade				

TABLE XLII (continued)

COMPUTATIONS FOR DETERMINING READING LEVELS OF SPEECH A AND OF SPEECH B*

Item	Samples			
	1	2	3	4
SPEECH B				
(1) Number of words in sample	113	116	137	130
(2) Number of sentences in sample	3	5	3	5
(3) Number of words not on Dale List	30	20	44	26
(4) Average sentence length: (1) ÷ (2)	38	23	46	26
(5) Dale score: (3) ÷ (1) x 100	27	17	32	20
(6) Average sentence length (4) x .0496	1.8848	1.1408	2.2816	1.2896
(7) Dale score (5) x .1579	4.2633	2.6843	5.0528	3.1580
(8) Constant	3.6365	3.6365	3.6365	3.6365
(9) Formula raw score: (6) + (7) + (8)	9.7846	7.4616	10.9709	8.0841

Average raw score of four samples: 9.0753

Average corrected grade level: 13th-15th grade

* Edgar Dale and Jeanne S. Chall, "A Formula for Predicting Readability," Educational Research Bulletin, XXVII (1948), 11-20, 37-54.

APPENDIX 8

TWO-MINUTE SELECTION USED FOR RATING SKILL OF SPEAKERS¹

You gentlemen are experts in the art of developing reputations for your branded products. You can, therefore, appreciate the present predicament of the United Nations. It was held out as being a cure-all and now it is seen to be much less than that.

You, I know, do not try to create reputations that cannot be sustained. You make good products and keep your advertising in line with probable performance. You are able to control the situation because you do your own advertising. But the United Nations has been the victim of free advertising by well-meaning, but over-enthusiastic and inexperienced, friends.

The United Nations ought never have been portrayed as a mechanism which could guarantee peace. After the Dumbarton Oaks Conference, I pointed out that the proposed veto power in the Security Council would make it impossible to take decisive action against any one of the Great Powers or against any other nation which any Great Power was disposed to protect. The result, I said, was that action by the Security Council "presupposes a political unanimity of the

¹ John Foster Dulles, "Reputation and Performance in World Affairs," Vital Speeches of the Day, XV (May 15, 1949), 465.

Great Powers which has rarely occurred and which, if it prevails, will itself assure peace."

Immediately after the San Francisco Conference, I wrote that since Security Council action could not be taken without the concurrence of the five Permanent Members "the Security Council might prove rather impotent so far as concerned its use of force." That, I said, was a "grave inadequacy to which the Conference felt it had to reconcile itself."

That was the point of view generally held by those who worked on the Charter. Of course, we all hoped that there would be a large degree of Great Power unity, but history taught that this was not likely and consequently that the United Nations would probably have to depend primarily on moral power to persuade, and not on legal power to command.

APPENDIX 9

TABLE XLIII

ORDER IN WHICH DIFFERENT GROUPS OF JUDGES
HEARD PANELS OF SKILLED AND UNSKILLED SPEAKERS
PRESENT THE SAME TWO-MINUTE SELECTION

Type of panel	Groups of judges		
	Public speaking	Radio majors	Faculty
Unskilled	A	J	D
	B	A	E
	C	B	F
	D	C	J
	E	D	A
Skilled	F	E	B
	J	F	C
	F	U	F
	Q	V	S
	R	Q	T
	S	R	U
	T	S	V
	U	T	Q
	V	T	R

APPENDIX 10

TABLE XLIV

RATINGS BY THREE GROUPS OF JUDGES OF PANELS OF SKILLED AND UNSKILLED SPEAKERS

Speakers	Ratings by judges										Combined ratings	
	Speech class			Faculty			Radio majors					
	Ratings	To- tal	Rank	Ratings	To- tal	Rank	Ratings	To- tal	Rank	To- tal	Rank	
SKILLED												
Q	1 1 7 1 6 4 2 1 1 2 4 5 1 3	39	1	4 6 3 1 1 1 4 3 1 7 1	32	2	3 2 6 2 2 1 2 2 1 1 1 2 4 3 3 3 3 5 2 6 6 1 2 6 3 3 5	80	1.5	151	1	
R	5 2 4 2 5 6 1 6 2 3 5 2 3 7	53	3	2 5 5 4 6 3 3 5 3 3 4	43	4	1 6 3 5 3 3 1 1 3 2 2 3 2 4 5 5 2 7 1 2 2 3 4 2 1 1 6	80	1.5	176	3	
S	6 4 1 4 3 2 7 4 4 7 6 4 4 6	62	5.5	5 4 2 3 2 6 2 4 5 6 7	46	5	2 3 2 6 6 5 4 4 5 6 5 5 1 6 6 7 6 1 6 7 3 6 3 7 5 6 1	124	5	232	5	
T	7 7 5 6 2 5 5 2 7 1 3 3 5 4	62	5.5	6 3 7 7 7 2 7 7 6 4 3	59	6	5 4 7 4 7 6 5 5 7 4 3 4 5 7 7 6 5 3 5 4 5 5 5 4 6 4 2	134	6	255	6	
U	3 6 2 7 1 1 6 3 5 4 2 7 6 1	54	4	1 1 4 5 3 5 6 2 4 2 6	39	3	6 1 1 1 1 2 6 6 4 5 6 6 6 2 2 2 4 6 7 1 4 4 6 3 4 5 4	105	4	198	4	
V	4 5 3 5 4 3 3 5 3 6 1 1 2 2	47	2	3 2 1 2 5 4 1 1 2 5 2	28	1	4 7 5 3 4 4 4 3 2 3 4 1 7 5 1 4 1 2 3 3 1 2 1 1 2 2 7	86	3	161	2	
F	2 3 6 3 7 7 4 7 6 5 7 6 7 5	75	7	7 7 6 6 4 7 5 6 7 1 5	61	7	7 5 4 7 5 7 7 7 6 7 7 7 3 1 4 1 7 4 4 5 7 7 7 5 7 7 3	148	7	284	7	

TABLE XLIV (continued)

RATINGS BY THREE GROUPS OF JUDGES OF PANELS OF SKILLED AND UNSKILLED SPEAKERS

Speakers	Ratings by judges										Combined ratings	
	Speech class			Faculty			Radio majors					
	Ratings	To- tal	Rank	Ratings	To- tal	Rank	Ratings	To- tal	Rank	To- tal	Rank	
UNSKILLED												
A	5 2 4 5 7 7 7 5 3 6 7 6 7 4	75	6	4 7 3 4 3 4 6 6 4 7 6	54	6	6 4 4 4 6 4 4 3 6 4 6 6 5 7 4 7 7 6 7 6 6 6 5 5 6 1	135	6	264	6	
B	7 3 6 4 5 5 6 7 7 7 6 7 6 3	79	7	6 2 5 3 4 6 5 5 6 5 4	51	4.5	7 6 5 6 4 6 6 4 4 5 4 3 2 4 6 6 4 3 3 5 5 4 4 2 5 3	116	4	246	5	
C	4 4 3 6 4 4 5 6 2 4 3 5 3 6	59	4	5 4 4 2 2 3 4 3 3 1 2	33	2	5 3 2 3 3 5 5 7 3 6 5 4 3 2 3 5 3 7 5 4 4 3 3 4 4 5	106	3	198	3	
D	2 1 5 3 1 2 2 2 1 2 2 4 1 2	30	1.5	2 5 2 7 5 2 2 2 2 4 3	36	3	2 1 6 2 2 2 1 2 2 1 1 2 4 3 2 1 2 2 2 3 3 2 2 3 3 2	58	2	124	2	
E	6 5 7 1 3 3 1 1 6 5 4 2 5 7	56	3	3 3 6 5 7 7 1 4 5 3 7	51	4.5	3 7 7 5 5 3 2 6 7 3 2 7 6 6 5 4 6 4 4 2 2 5 7 6 1 7	122	5	229	4	
F	1 6 1 2 2 1 3 4 4 1 1 1 2 1	30	1.5	1 1 1 1 1 1 3 1 1 2 1	14	1	1 2 1 1 1 1 3 1 1 2 3 1 1 1 1 2 1 1 1 1 1 1 1 1 2 6	39	1	83	1	
J	3 7 2 7 6 6 4 3 5 3 5 3 4 5	63	5	7 6 7 6 6 5 7 7 7 6 5	69	7	4 5 3 7 7 7 7 5 5 7 7 5 7 5 7 3 5 5 6 7 7 7 6 7 7 4	152	7	284	7	

APPENDIX 11

TABLE XLV
MINUTES REQUIRED FOR PLAYING
RECORDINGS OF EXPERIMENTAL MATERIALS

Speaker	Speech A		Speech B	
	Organized	Disorganized	Organized	Disorganized
Skilled A	21	20	21.5	19
Skilled B	23	21.5	20.5	20
Unskilled C	25	24.5	24	23.5
Unskilled D	24	23.5	22	23

APPENDIX 12

TABLE XLVI
NUMBER OF SUBJECTS EXPOSED TO
EARLY FORMS OF COMPREHENSION TESTS

Group	Test A	Test B
Exposed to experimental materials and first form of test	24	9
Exposed to first form of test only	18	19
Exposed to experimental materials and revised form of test	27	26
Exposed to revised test only	14	14

APPENDIX 13

TABLE XLVII

COMPARISONS OF COMPREHENSION MEANS AND "L" MEANS FOR APRIL 1950
BOYS AND GIRLS WITH OCTOBER 1950 BOYS AND GIRLS OF EACH EXPERIMENTAL GROUP

Group	N	Comprehension test scores					Raw "L" scores, ACE Psych test				
		Mean	S.E.M	S.D.	t	Probability	Mean	S.E.M	S.D.	t	Probability
BOYS											
Hearing											
Spring	97	13.08	.50	4.89	.99	Between .50 and .10	58.69	1.54	15.05	1.56	Between .50 and .10
Fall	70	<u>13.79</u>	<u>.52</u>	4.32			<u>54.57</u>	<u>2.14</u>	17.80		
Difference		.71	.72				4.12	2.64			
Seeing											
Spring	63	16.97	.62	4.86	.98	Between .50 and .10	58.69	1.92	15.10	.70	Between .50 and .10
Fall	43	<u>16.05</u>	<u>.70</u>	4.53			<u>56.57</u>	<u>2.30</u>	14.90		
Difference		.92	.94				2.12	3.03			
Easy											
Spring	68	16.79	.70	5.73	.49	Greater than .50	59.41	1.83	15.00	1.08	Between .50 and .10
Fall	55	<u>16.31</u>	<u>.67</u>	4.94			<u>56.14</u>	<u>2.42</u>	17.75		
Difference		.48	.97				3.27	3.03			
Hard											
Spring	92	13.67	.51	4.82	2.03	Between .05 and .02	58.15	1.58	15.10	1.37	Between .50 and .10
Fall	58	<u>15.07</u>	<u>.46</u>	3.45			<u>54.57</u>	<u>2.09</u>	15.75		
Difference		1.40	.69				3.58	2.62			
Organized											
Spring	67	15.72	.76	6.20	1.01	Between .50 and .10	60.19	1.78	14.50	1.59	Between .50 and .10
Fall	50	<u>14.68</u>	<u>.70</u>	4.93			<u>55.60</u>	<u>2.26</u>	15.80		
Difference		1.04	1.03				4.59	2.88			

TABLE XLVII (continued)

COMPARISONS OF COMPREHENSION MEANS AND "L" MEANS FOR APRIL 1950
BOYS AND GIRLS WITH OCTOBER 1950 BOYS AND GIRLS OF EACH EXPERIMENTAL GROUP

Group	N	Comprehension test scores					Raw "L" scores, ACE Psych test				
		Mean	S.E. _M	S.D.	<u>t</u>	Probability	Mean	S.E. _M	S.D.	<u>t</u>	Probability
BOYS											
Disorganized											
Spring	93	14.48	.50	4.77	.19	Greater than .50	57.61	1.61	15.40	.91	Between .50 and .10
Fall	63	<u>14.62</u>	<u>.53</u>	4.20			<u>55.12</u>	<u>2.22</u>	17.50		
Difference		.14	.73				2.49	2.74			
Skilled											
Spring	56	13.89	.62	4.57	.42	Greater than .50	58.75	2.06	15.25	2.19	Between .05 and .02
Fall	34	<u>14.29</u>	<u>.72</u>	4.16			<u>50.88</u>	<u>2.94</u>	16.90		
Difference		.40	.95				7.87	3.59			
Unskilled											
Spring	41	11.98	.81	5.10	1.21	Between .50 and .10	58.60	2.34	14.80	.14	Greater than .50
Fall	36	<u>13.31</u>	<u>.75</u>	4.42			<u>58.06</u>	<u>3.02</u>	17.85		
Difference		1.33	1.10				.54	3.82			
Hear easy											
Spring	44	15.02	.81	5.29	.49	Greater than .50	57.61	2.36	15.45	.72	Between .50 and .10
Fall	36	<u>15.56</u>	<u>.78</u>	4.61			<u>54.86</u>	<u>3.03</u>	17.95		
Difference		.54	1.12				2.75	3.84			
Hear hard											
Spring	53	11.47	.53	3.84	.60	Greater than .50	59.58	2.03	14.65	1.45	Between .50 and .10
Fall	34	<u>11.91</u>	<u>.53</u>	3.02			<u>54.26</u>	<u>3.05</u>	17.55		
Difference		.45	.75				5.32	3.66			

TABLE XLVII (continued)

COMPARISONS OF COMPREHENSION MEANS AND "L" MEANS FOR APRIL 1950
BOYS AND GIRLS WITH OCTOBER 1950 BOYS AND GIRLS OF EACH EXPERIMENTAL GROUP

Group	N	Comprehension test scores					Raw "L" scores, ACE Psych test				
		Mean	S.E.M	S.D.	t	Probability	Mean	S.E.M	S.D.	t	Probability
BOYS											
Hear organized											
Spring	41	13.34	.88	5.59	.67	Greater than .50	58.23	2.53	16.00	.84	Between .50 and .10
Fall	31	<u>14.16</u>	<u>.85</u>	4.64			<u>55.08</u>	<u>2.77</u>	15.15		
Difference		.82	1.22				3.15	3.75			
Hear disorganized											
Spring	56	12.89	.58	4.30	.69	Between .50 and .10	59.02	1.93	14.30	1.30	Between .50 and .10
Fall	39	<u>13.49</u>	<u>.65</u>	4.02			<u>54.17</u>	<u>3.18</u>	19.60		
Difference		.60	.87				4.85	3.72			
Skilled easy											
Spring	27	15.33	1.01	5.17	.00	Greater than .50	57.68	3.35	17.10	1.58	Between .50 and .10
Fall	18	<u>15.33</u>	<u>1.17</u>	4.81			<u>49.44</u>	<u>3.99</u>	16.45		
Difference		0.00	1.55				8.24	5.21			
Skilled hard											
Spring	29	12.55	.64	3.41	.58	Greater than .50	59.74	2.50	13.25	1.41	Between .50 and .10
Fall	16	<u>13.12</u>	<u>.74</u>	2.85			<u>52.50</u>	<u>4.47</u>	17.32		
Difference		.57	.98				7.24	5.12			
Skilled organized											
Spring	22	13.91	1.17	5.37	.97	Between .50 and .10	56.82	3.87	17.75	.06	Greater than .50
Fall	14	<u>15.57</u>	<u>1.26</u>	4.56			<u>57.14</u>	<u>3.98</u>	14.35		
Difference		1.66	1.72				.32	5.55			

TABLE XLVII (continued)

COMPARISONS OF COMPREHENSION MEANS AND "L" MEANS FOR APRIL 1950
BOYS AND GIRLS WITH OCTOBER 1950 BOYS AND GIRLS OF EACH EXPERIMENTAL GROUP

Group	N	Comprehension test scores					Raw "L" scores, ACE Psych test				
		Mean	S.E.M	S.D.	t	Probability	Mean	S.E.M	S.D.	t	Probability
BOYS											
Skilled											
disorganized											
Spring	34	13.88	.69	3.96	.45	Greater than .50	60.00	2.31	13.25	2.95	Less than .01
Fall	20	<u>13.40</u>	<u>.82</u>	3.58			<u>46.50</u>	<u>3.94</u>	17.20		
Difference		.48	1.07				13.50	4.57			
Unskilled easy											
Spring	17	14.53	1.36	5.45	.73	Between .50 and .10	57.50	3.12	12.50	.52	Greater than .50
Fall	18	<u>15.78</u>	<u>1.06</u>	4.39			<u>60.28</u>	<u>4.32</u>	17.80		
Difference		1.25	1.72				2.78	5.33			
Unskilled hard											
Spring	24	10.17	.82	3.93	.62	Greater than .50	59.38	3.37	16.15	.65	Greater than .50
Fall	18	<u>10.83</u>	<u>.67</u>	2.75			<u>55.83</u>	<u>4.28</u>	17.65		
Difference		.66	1.06				3.55	5.45			
Unskilled organized											
Spring	19	12.68	1.36	5.76	.18	Greater than .50	59.87	3.21	13.60	1.29	Between .50 and .10
Fall	17	<u>13.00</u>	<u>1.10</u>	4.38			<u>53.38</u>	<u>3.89</u>	15.55		
Difference		.32	1.75				6.49	5.04			

TABLE XLVII (continued)

COMPARISONS OF COMPREHENSION MEANS AND "L" MEANS FOR APRIL 1950
BOYS AND GIRLS WITH OCTOBER 1950 BOYS AND GIRLS OF EACH EXPERIMENTAL GROUP

Group	N	Comprehension test scores					Raw "L" scores, ACE Psych test				
		Mean	S.E.M	S.D.	<u>t</u>	Probability	Mean	S.E.M	S.D.	<u>t</u>	Probability
BOYS											
Skilled disorganized											
Spring	34	13.88	.69	3.96	.45	Greater than .50	60.00	2.31	13.25	2.95	Less than .01
Fall	20	<u>13.40</u>	<u>.82</u>	3.58			<u>46.50</u>	<u>3.94</u>	17.20		
Difference		.48	1.07				13.50	4.57			
Unskilled easy											
Spring	17	14.53	1.36	5.45	.73	Between .50 and .10	57.50	3.12	12.50	.52	Greater than .50
Fall	18	<u>15.78</u>	<u>1.06</u>	4.39			<u>60.28</u>	<u>4.32</u>	17.80		
Difference		1.25	1.72				2.78	5.33			
Unskilled hard											
Spring	24	10.17	.82	3.93	.62	Greater than .50	59.38	3.37	16.15	.65	Greater than .50
Fall	18	<u>10.83</u>	<u>.67</u>	2.75			<u>55.83</u>	<u>4.28</u>	17.65		
Difference		.66	1.06				3.55	5.45			
Unskilled organized											
Spring	19	12.68	1.36	5.76	.18	Greater than .50	59.87	3.21	13.60	1.29	Between .50 and .10
Fall	17	<u>13.00</u>	<u>1.10</u>	4.38			<u>53.38</u>	<u>3.89</u>	15.55		
Difference		.32	1.75				6.49	5.04			

TABLE XLVII (continued)

COMPARISONS OF COMPREHENSION MEANS AND "L" MEANS FOR APRIL 1950
BOYS AND GIRLS WITH OCTOBER 1950 BOYS AND GIRLS OF EACH EXPERIMENTAL GROUP

Group	N	Comprehension test scores					Raw "L" scores, ACE Psych test				
		Mean	S.E.M	S.D.	t	Probability	Mean	S.E.M	S.D.	t	Probability
BOYS											
Unskilled											
disorganized											
Spring	22	11.36	.95	4.35	1.56	Between .50 and .10	57.50	3.42	15.65	.85	Between .50 and .10
Fall	19	13.58	1.05	4.44			62.24	4.42	18.75		
Difference		2.22	1.42				4.74	5.59			
See easy											
Spring	24	20.04	1.05	5.04	1.42	Between .50 and .10	62.71	2.84	13.60	.85	Between .50 and .10
Fall	19	17.74	1.23	5.21			58.55	4.02	17.05		
Difference		2.30	1.62				4.16	4.92			
See hard											
Spring	39	16.67	.70	4.35	1.98	Between .10 and .05	56.22	2.51	15.45	.33	Greater than .50
Fall	24	14.71	.70	3.35			55.00	2.66	12.75		
Difference		1.96	.99				1.22	3.66			
See organized											
Spring	26	19.46	1.04	5.20	2.43	Between .02 and .01	63.27	2.41	12.05	1.46	Between .50 and .10
Fall	19	15.53	1.24	5.27			56.45	3.99	16.85		
Difference		3.93	1.62				6.82	4.66			

TABLE XLVII (continued)

COMPARISONS OF COMPREHENSION MEANS AND "L" MEANS FOR APRIL 1950
BOYS AND GIRLS WITH OCTOBER 1950 BOYS AND GIRLS OF EACH EXPERIMENTAL GROUP

Group	N	Comprehension test scores					Raw "L" scores, ACE Psych test				
		Mean	S.E. _M	S.D.	t	Probability	Mean	S.E. _M	S.D.	t	Probability
BOYS											
See											
disorganized											
Spring	37	16.89	.72	4.39	.40	Greater than .50	55.47	2.78	16.65	.31	Greater than .50
Fall	24	16.46	.79	3.80			56.67	2.75	13.20		
Difference		.43	1.07				1.20	3.91			
Easy organized											
Spring	34	17.12	1.14	6.57	.39	Greater than .50	58.68	2.83	16.25	.14	Greater than .50
Fall	22	17.73	1.10	5.04			59.32	3.52	16.15		
Difference		.61	1.58				.64	4.52			
Easy disorganized											
Spring	34	16.47	.82	4.72	.96	Between .50 and .10	60.15	2.38	13.70	1.52	Between .50 and .10
Fall	33	15.36	.82	4.63			54.02	3.26	18.45		
Difference		1.11	1.16				6.13	4.04			
Hard organized											
Spring	33	14.27	.96	5.43	1.74	Between .10 and .05	61.74	2.17	12.25	2.52	Between .02 and .01
Fall	28	12.29	.62	3.24			52.68	2.87	14.90		
Difference		1.98	1.14				9.06	3.60			

TABLE XLVII (continued)

COMPARISONS OF COMPREHENSION MEANS AND "L" MEANS FOR APRIL 1950
BOYS AND GIRLS WITH OCTOBER 1950 BOYS AND GIRLS OF EACH EXPERIMENTAL GROUP

Group	N	Comprehension test scores					Raw "L" scores, ACE Psych test				
		Mean	S.E. _M	S.D.	t	Probability	Mean	S.E. _M	S.D.	t	Probability
BOYS											
Hard											
disorganized											
Spring	59	13.34	.58	4.39	.53	Greater than .50	56.14	2.11	16.10	.05	Greater than .50
Fall	30	<u>13.80</u>	<u>.65</u>	3.48			<u>56.33</u>	<u>3.03</u>	16.30		
Difference		.46	.87				.19	3.69			
GIRLS											
Hearing											
Spring	71	12.89	.48	4.03	1.83	Between .10 and .05	59.47	1.79	15.00	1.48	Between .50 and .10
Fall	75	<u>14.21</u>	<u>.54</u>	4.67			<u>63.10</u>	<u>1.69</u>	14.55		
Difference		1.32	.72				3.63	2.46			
Seeing											
Spring	37	18.81	.75	4.48	1.35	Between .50 and .10	59.39	2.24	13.45	.40	Greater than .50
Fall	34	<u>17.24</u>	<u>.89</u>	5.13			<u>60.74</u>	<u>2.54</u>	14.60		
Difference		1.57	1.16				1.35	3.39			
Easy											
Spring	49	16.08	.73	5.09	.54	Greater than .50	59.64	2.11	14.60	1.07	Between .50 and .10
Fall	54	<u>16.59</u>	<u>.59</u>	4.31			<u>62.87</u>	<u>2.16</u>	15.70		
Difference		.51	.94				3.23	3.02			

TABLE XLVII (continued)

COMPARISONS OF COMPREHENSION MEANS AND "L" MEANS FOR APRIL 1950
BOYS AND GIRLS WITH OCTOBER 1950 BOYS AND GIRLS OF EACH EXPERIMENTAL GROUP

Group	N	Comprehension test scores					Raw "L" scores, ACE Psych test				
		Mean	S.E.M	S.D.	t	Probability	Mean	S.E.M	S.D.	t	Probability
GIRLS											
Hard											
Spring	59	13.95	.63	4.81	1.88	Between .10 and .05	59.28	1.89	14.40	.98	Between .50 and .10
Fall	55	15.75	.72	5.26			61.86	1.82	13.40		
Difference		1.80	.96				2.58	2.62			
Organized											
Spring	56	15.43	.74	5.52	.29	Greater than .50	60.36	1.89	14.00	.98	Between .50 and .10
Fall	55	15.71	.62	4.52			63.14	2.13	15.65		
Difference		.28	.97				2.78	2.85			
Disorganized											
Spring	52	14.37	.62	4.41	.23	Greater than .50	58.46	2.09	14.95	1.12	Between .50 and .10
Fall	54	14.59	.74	5.42			61.57	1.84	13.40		
Difference		.22	.97				3.11	2.78			
Skilled											
Spring	47	12.98	.60	4.09	1.67	Between .10 and .05	57.50	2.26	15.35	1.69	Between .10 and .05
Fall	32	14.78	.90	5.03			63.59	2.82	15.70		
Difference		1.80	1.08				6.09	3.61			
Unskilled											
Spring	24	12.71	.82	3.92	1.02	Between .50 and .10	63.35	2.80	13.45	.18	Greater than .50
Fall	43	13.79	.67	4.33			62.73	2.10	13.60		
Difference		1.08	1.06				.62	3.50			

TABLE XLVII (continued)

COMPARISONS OF COMPREHENSION MEANS AND "L" MEANS FOR APRIL 1950
BOYS AND GIRLS WITH OCTOBER 1950 BOYS AND GIRLS OF EACH EXPERIMENTAL GROUP

Group	N	Comprehension test scores					Raw "L" scores, ACE Psych test				
		Mean	S.E.M	S.D.	t	Probability	Mean	S.E.M	S.D.	t	Probability
GIRLS											
Hear easy											
Spring	36	14.25	.73	4.33	1.29	Between .50 and .10	59.17	2.49	14.75	1.10	Between .50 and .10
Fall	37	15.46	.60	3.61			63.18	2.67	16.00		
Difference		1.21	.94				4.01	3.65			
Hear hard											
Spring	35	11.49	.54	3.15	1.48	Between .50 and .10	59.79	2.62	15.25	.97	Between .50 and .10
Fall	38	13.00	.86	5.23			63.03	2.13	12.95		
Difference		1.51	1.02				3.24	3.38			
Hear organized											
Spring	36	13.31	.78	4.59	.93	Between .50 and .10	60.00	2.48	14.65	.60	Greater than .50
Fall	37	14.24	.62	3.72			62.23	2.73	16.40		
Difference		.93	1.00				2.23	3.69			
Hear disorganized											
Spring	35	12.46	.57	3.32	1.69	Between .10 and .05	58.93	2.63	15.35	1.51	Between .50 and .10
Fall	38	14.18	.85	5.19			63.95	2.04	12.40		
Difference		1.72	1.02				5.02	3.33			

TABLE XLVII (continued)

COMPARISONS OF COMPREHENSION MEANS AND "L" MEANS FOR APRIL 1950
BOYS AND GIRLS WITH OCTOBER 1950 BOYS AND GIRLS OF EACH EXPERIMENTAL GROUP

Group	N	Comprehension test scores					Raw "L" scores, ACE Psych test				
		Mean	S.E.M	S.D.	<u>t</u>	Probability	Mean	S.E.M	S.D.	<u>t</u>	Probability
GIRLS											
Skilled easy											
Spring	25	13.96	.89	4.37	1.33	Between .50 and .10	55.10	2.78	13.60	1.50	Between .50 and .10
Fall	17	15.59	.84	3.34			63.09	4.54	18.15		
Difference		1.63	1.23				7.99	5.32			
Skilled hard											
Spring	22	11.68	.75	3.43	1.19	Between .50 and .10	60.23	3.64	16.70	.80	Between .50 and .10
Fall	15	13.87	1.68	6.30			64.17	3.30	12.35		
Difference		2.19	1.84				3.94	4.91			
Skilled organized											
Spring	26	12.73	.95	4.73	.99	Between .50 and .10	56.54	2.79	13.95	1.10	Between .50 and .10
Fall	14	14.14	1.05	3.78			62.50	4.63	16.70		
Difference		1.41	1.42				5.96	5.41			
Skilled disorganized											
Spring	21	13.29	.69	3.10	1.28	Between .50 and .10	58.69	3.76	16.80	1.10	Between .50 and .10
Fall	18	15.28	1.40	5.77			64.44	3.60	14.85		
Difference		1.99	1.56				5.75	5.21			

TABLE XLVII (continued)

COMPARISONS OF COMPREHENSION MEANS AND "L" MEANS FOR APRIL 1950
BOYS AND GIRLS WITH OCTOBER 1950 BOYS AND GIRLS OF EACH EXPERIMENTAL GROUP

Group	N	Comprehension test scores					Raw "L" scores, ACE Psych test				
		Mean	S.E. _M	S.D.	<u>t</u>	Probability	Mean	S.E. _M	S.D.	<u>t</u>	Probability
GIRLS											
Unskilled easy											
Spring	11	14.91	1.32	4.17	.28	Greater than .50	68.41	4.14	13.10	.99	Between .50 and .10
Fall	20	<u>15.35</u>	<u>.87</u>	3.81			<u>63.25</u>	<u>3.19</u>	13.90		
Difference		.44	1.58				5.16	5.23			
Unskilled hard											
Spring	13	10.85	.72	2.48	1.35	Between .50 and .10	59.04	3.55	12.30	.71	Between .50 and .10
Fall	23	<u>12.43</u>	<u>.92</u>	4.30			<u>62.28</u>	<u>2.84</u>	13.30		
Difference		1.58	1.17				3.24	4.55			
Unskilled organized											
Spring	10	14.80	1.28	3.84	.32	Greater than .50	69.00	4.15	12.45	1.29	Between .50 and .10
Fall	23	<u>14.30</u>	<u>.90</u>	4.23			<u>62.06</u>	<u>3.45</u>	16.20		
Difference		.50	1.56				6.94	5.38			
Unskilled disorganized											
Spring	14	11.21	.90	3.23	1.47	Between .50 and .10	59.29	3.54	12.75	1.01	Between .50 and .10
Fall	20	<u>13.20</u>	<u>1.00</u>	4.38			<u>63.50</u>	<u>2.22</u>	9.70		
Difference		1.99	1.35				4.21	4.18			

TABLE XLVII (continued)

COMPARISONS OF COMPREHENSION MEANS AND "L" MEANS FOR APRIL 1950
BOYS AND GIRLS WITH OCTOBER 1950 BOYS AND GIRLS OF EACH EXPERIMENTAL GROUP

Group	N	Comprehension test scores					Raw "L" scores, ACE Psych test				
		Mean	S.E. _M	S.D.	t	Probability	Mean	S.E. _M	S.D.	t	Probability
GIRLS											
See easy											
Spring	13	21.15	.94	3.25	1.39	Between .50 and .10	60.96	4.06	14.05	.23	Greater than .50
Fall	17	<u>19.06</u>	<u>1.17</u>	4.67			<u>62.21</u>	<u>3.78</u>	15.10		
Difference		2.09	1.50				1.25	5.55			
See hard											
Spring	24	17.54	.95	4.54	1.37	Between .50 and .10	58.54	2.72	13.05	.16	Greater than .50
Fall	17	<u>15.41</u>	<u>1.23</u>	4.92			<u>59.26</u>	<u>3.49</u>	13.95		
Difference		2.13	1.55				.72	4.42			
See organized											
Spring	20	19.25	1.14	4.96	.36	Greater than .50	61.00	2.90	12.65	.90	Between .50 and .10
Fall	18	<u>18.72</u>	<u>.94</u>	3.86			<u>65.00</u>	<u>3.33</u>	13.75		
Difference		.53	1.48				4.00	4.42			
See disorganized											
Spring	17	18.29	.94	3.77	1.53	Between .50 and .10	57.50	3.54	14.15	.31	Greater than .50
Fall	16	<u>15.56</u>	<u>1.51</u>	5.83			<u>55.94</u>	<u>3.61</u>	14.00		
Difference		2.73	1.78				1.56	5.06			

TABLE XLVII (continued)

COMPARISONS OF COMPREHENSION MEANS AND "L" MEANS FOR APRIL 1950
BOYS AND GIRLS WITH OCTOBER 1950 BOYS AND GIRLS OF EACH EXPERIMENTAL GROUP

Group	N	Comprehension test scores					Raw "L" scores, ACE Psych test				
		Mean	S.E.M	S.D.	t	Probability	Mean	S.E.M	S.D.	t	Probability
GIRLS											
Easy organized											
Spring	30	16.50	1.03	5.57			59.83	3.02	16.25		
Fall	29	16.90	.82	4.32	.30	Greater	63.36	3.26	17.25	.80	Between .50
Difference		.40	1.32			than .50	3.53	4.44			and .10
Easy disorganized											
Spring	19	15.42	.97	4.12			59.34	2.71	11.50		
Fall	25	16.24	.87	4.27	.63	Greater	62.30	2.81	13.75	.76	Between .50
Difference		.82	1.30			than .50	2.96	3.90			and .10
Hard organized											
Spring	26	14.19	1.04	5.19			60.96	2.14	10.70		
Fall	26	14.38	.87	4.36	.14	Greater	62.88	2.73	13.65	.55	Greater
Difference		.19	1.36			than .50	1.92	3.47			than .50
Hard disorganized											
Spring	33	13.76	.79	4.47			57.95	2.93	16.60		
Fall	29	13.17	1.11	5.89	.43	Greater	60.95	2.46	13.05	.78	Between .50
Difference		.59	1.36			than .50	3.00	3.83			and .10

APPENDIX 14

TABLE XLVIII

COMPARISONS OF COMPREHENSION MEANS AND "L" MEANS
BETWEEN GIRLS AND BOYS OF EACH OF THE EXPERIMENTAL GROUPS

Group	N	Comprehension test scores					Raw "L" scores, ACE Psych test				
		Mean	S.E.M	S.D.	t	Probability	Mean	S.E.M	S.D.	t	Probability
Hearing											
Girls	146	13.57	.37	4.42	.37	Greater than .50	61.34	1.23	14.85	2.47	Between .02 and .01
Boys	167	13.38	.36	4.67			56.96	1.27	16.40		
Difference		.19	.52				4.38	1.77			
Seeing											
Girls	71	18.06	.58	4.87	1.15	Between .50 and .10	60.04	1.68	14.05	.99	Between .50 and .10
Boys	106	17.18	.48	4.95			57.83	1.47	15.05		
Difference		.88	.76				2.21	2.23			
Easy											
Girls	103	16.35	.47	4.70	.33	Greater than .50	61.34	1.51	15.30	1.61	Between .50 and .10
Boys	123	16.58	.49	5.40			57.95	1.48	16.40		
Difference		.23	.68				3.39	2.11			
Hard											
Girls	114	13.85	.47	5.03	.70	Between .50 and .10	60.53	1.32	14.00	2.05	Between .05 and .02
Boys	150	13.44	.36	4.34			56.77	1.27	15.45		
Difference		.41	.59				3.76	1.83			
Organized											
Girls	111	15.57	.48	5.05	.41	Greater than .50	61.73	1.42	14.90	1.75	Between .10 and .05
Boys	117	15.27	.53	5.72			58.23	1.42	15.25		
Difference		.30	.72				3.50	2.01			

TABLE XLVIII (continued)

COMPARISONS OF COMPREHENSION MEANS AND "L" MEANS
BETWEEN GIRLS AND BOYS OF EACH OF THE EXPERIMENTAL GROUPS

Group	N	Comprehension test scores					Raw "L" scores, ACE Psych test				
		Mean	S.E.M	S.D.	t	Probability	Mean	S.E.M	S.D.	t	Probability
Disorganized											
Girls	106	14.48	.48	4.96	.09	Greater than .50	60.05	1.40	14.30	1.79	Between .10 and .05
Boys	156	14.54	.36	4.54			56.60	1.31	16.30		
Difference		.06	.61				3.45	1.92			
Skilled											
Girls	79	13.71	.52	4.58	.48	Greater than .50	59.97	1.78	15.75	1.69	Between .10 and .05
Boys	90	14.04	.47	4.42			55.78	1.73	16.35		
Difference		.33	.70				4.19	2.48			
Unskilled											
Girls	67	13.40	.52	4.22	1.06	Between .50 and .10	62.95	1.67	13.55	1.84	Between .10 and .05
Boys	77	12.60	.56	4.84			58.34	1.87	16.30		
Difference		.80	.76				4.61	2.51			
Hear easy											
Girls	73	14.86	.47	4.02	.54	Greater than .50	61.20	1.83	15.55	1.84	Between .10 and .05
Boys	80	15.26	.56	5.00			56.38	1.88	16.70		
Difference		.40	.74				4.82	2.62			
Hear hard											
Girls	73	12.27	.52	4.42	.97	Between .50 and .10	61.47	1.67	14.20	1.65	Between .50 and .10
Boys	87	11.64	.38	3.55			57.50	1.73	16.05		
Difference		.63	.65				3.97	2.40			

TABLE XLVIII (continued)

COMPARISONS OF COMPREHENSION MEANS AND "L" MEANS
BETWEEN GIRLS AND BOYS OF EACH OF THE EXPERIMENTAL GROUPS

Group	N	Comprehension test scores					Raw "L" scores, ACE Psych test				
		Mean	S.E.M	S.D.	t	Probability	Mean	S.E.M	S.D.	t	Probability
Hear organized											
Girls	73	13.78	.51	4.36	.11	Greater than .50	61.13	1.84	15.60	1.62	Between .50 and .10
Boys	72	<u>13.69</u>	<u>.62</u>	5.22			<u>56.88</u>	<u>1.86</u>	15.70		
Difference		.09	.80				4.25	2.62			
Hear disorganized											
Girls	73	13.36	.53	4.48	.32	Greater than .50	61.54	1.66	14.10	1.88	Between .10 and .05
Boys	95	<u>13.14</u>	<u>.43</u>	4.20			<u>57.03</u>	<u>1.74</u>	16.85		
Difference		.22	.68				4.51	2.40			
Skilled easy											
Girls	42	14.62	.63	4.06	.72	Between .50 and .10	58.33	2.51	16.05	1.09	Between .50 and .10
Boys	45	<u>15.33</u>	<u>.76</u>	5.03			<u>54.39</u>	<u>2.61</u>	17.30		
Difference		.71	.99				3.94	3.62			
Skilled hard											
Girls	37	12.68	.82	4.90	.08	Greater than .50	61.82	2.53	15.20	1.36	Between .50 and .10
Boys	45	<u>12.76</u>	<u>.49</u>	3.23			<u>57.17</u>	<u>2.29</u>	15.20		
Difference		.08	.95				4.65	3.41			
Skilled organized											
Girls	40	13.22	.72	4.47	1.19	Between .50 and .10	58.62	2.44	15.25	.45	Greater than .50
Boys	36	<u>14.56</u>	<u>.87</u>	5.13			<u>56.94</u>	<u>2.79</u>	16.50		
Difference		1.34	1.12				1.68	3.71			

TABLE XLVIII (continued)

COMPARISONS OF COMPREHENSION MEANS AND "L" MEANS
BETWEEN GIRLS AND BOYS OF EACH OF THE EXPERIMENTAL GROUPS

Group	N	Comprehension test scores					Raw "L" scores, ACE Psych test				
		Mean	S.E.M	S.D.	<u>t</u>	Probability	Mean	S.E.M	S.D.	<u>t</u>	Probability
Skilled disorganized											
Girls	39	14.21	.75	4.64	.54	Greater than .50	61.35	2.63	16.20	1.84	Between .10 and .05
Boys	54	<u>13.70</u>	<u>.53</u>	3.83			<u>55.00</u>	<u>2.23</u>	16.20		
Difference		.51	.92				6.35	3.45			
Unskilled easy											
Girls	31	15.19	.72	3.95	.02	Greater than .50	65.08	2.53	13.85	1.68	Between .10 and .05
Boys	35	<u>15.17</u>	<u>.85</u>	4.97			<u>58.93</u>	<u>2.66</u>	15.50		
Difference		.02	1.12				6.15	3.67			
Unskilled hard											
Girls	36	11.86	.65	3.82	1.67	Between .10 and .05	61.11	2.21	13.05	.94	Between .50 and .10
Boys	42	<u>10.45</u>	<u>.54</u>	3.49			<u>57.86</u>	<u>2.64</u>	16.90		
Difference		1.41	.84				3.25	3.44			
Unskilled organized											
Girls	33	14.45	.73	4.12	1.42	Between .50 and .10	64.17	2.74	15.50	1.98	Between .10 and .05
Boys	36	<u>12.83</u>	<u>.87</u>	5.16			<u>56.81</u>	<u>2.52</u>	14.90		
Difference		1.62	1.14				7.36	3.72			

TABLE XLVIII (continued)

COMPARISONS OF COMPREHENSION MEANS AND "L" MEANS
BETWEEN GIRLS AND BOYS OF EACH OF THE EXPERIMENTAL GROUPS

Group	N	Comprehension test scores					Raw "L" scores, ACE Psych test				
		Mean	S.E.M	S.D.	t	Probability	Mean	S.E.M	S.D.	t	Probability
Unskilled disorganized											
Girls	34	12.38	.71	4.07	.01	Greater than .50	61.76	1.96	11.25	.61	Greater than .50
Boys	41	<u>12.39</u>	<u>.72</u>	4.53			<u>59.70</u>	<u>2.74</u>	17.30		
Difference		.01	1.01				2.06	3.37			
See easy											
Girls	30	19.97	.79	4.25	.83	Between .50 and .10	61.67	2.72	14.65	.22	Greater than .50
Boys	43	<u>19.02</u>	<u>.81</u>	5.24			<u>60.87</u>	<u>2.37</u>	15.35		
Difference		.95	1.13				.80	3.61			
See hard											
Girls	41	16.66	.76	4.82	.80	Between .50 and .10	58.84	2.13	13.45	1.10	Between .50 and .10
Boys	63	<u>15.92</u>	<u>.52</u>	4.11			<u>55.75</u>	<u>1.84</u>	14.50		
Difference		.74	.92				3.09	2.81			
See organized											
Girls	38	19.00	.74	4.48	1.07	Between .50 and .10	62.89	2.19	13.35	.82	Between .50 and .10
Boys	45	<u>17.80</u>	<u>.84</u>	5.58			<u>60.39</u>	<u>2.13</u>	14.15		
Difference		1.20	1.12				2.50	3.05			
See disorganized											
Girls	33	16.97	.90	5.07	.24	Greater than .50	56.74	2.49	14.10	.25	Greater than .50
Boys	61	<u>16.72</u>	<u>.54</u>	4.17			<u>55.94</u>	<u>1.99</u>	15.40		
Difference		.25	1.05				.80	3.19			

TABLE XLVIII (continued)

COMPARISONS OF COMPREHENSION MEANS AND "L" MEANS
BETWEEN GIRLS AND BOYS OF EACH OF THE EXPERIMENTAL GROUPS

Group	N	Comprehension test scores					Raw "L" scores, ACE Psych test				
		Mean	S.E.M	S.D.	t	Probability	Mean	S.E.M	S.D.	t	Probability
Easy organized											
Girls	59	16.69	.66	5.00			61.57	2.21	16.85		
Boys	56	17.36	.81	6.03	.63	Greater than .50	58.93	2.18	16.20	.85	Between .50 and .10
Difference		.67	1.05				2.64	3.10			
Easy disorganized											
Girls	44	15.89	.65	4.23			61.02	1.97	12.90		
Boys	67	15.93	.58	4.71	.05	Greater than .50	57.13	2.03	16.50	1.38	Between .50 and .10
Difference		.04	.87				3.89	2.83			
Hard organized											
Girls	52	14.29	.67	4.79			61.92	1.72	12.30		
Boys	61	13.36	.60	4.66	1.03	Between .50 and .10	57.58	1.84	14.25	1.72	Between .10 and .05
Difference		.93	.90				4.34	2.52			
Hard disorganized											
Girls	62	13.48	.66	5.19			59.36	1.94	15.15		
Boys	89	13.49	.44	4.11	.01	Greater than .50	56.21	1.72	16.15	1.22	Between .50 and .10
Difference		.01	.80				3.15	2.59			

AUTOBIOGRAPHY

I, Kenneth Clare Beighley, was born in East McKeesport, Pennsylvania, September 8, 1914. I received my secondary education in the public schools of the city of McKeesport, Pennsylvania. My undergraduate training was obtained at Muskingum College, from which I received the degree Bachelor of Arts in 1936. From The Ohio State University I received the degree Master of Arts in 1937, with a major in the guidance area of the Education Department. During the Summer Quarter, 1938, I acted as assistant to Drs. W. H. Stone and W. H. Cowley at The Ohio State University. My work for the degree Doctor of Philosophy was done in the Department of Speech, with a major in public address and a minor in radio programming.