REATIONS OF RAILROAD WORKERS TO A
MAJOR TECHNOLOGICAL CHANGE

DISSERTATION
Presented in Partial Fulfillment of the Requirements
for the Degree Doctor of Philosophy in the
Graduate School of The Ohio State
University

By
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1953

Approved by:

Raymond F. Stott
Adviser
ACKNOWLEDGMENTS

Many individuals and groups have made this study possible, and their full and free cooperation is gratefully acknowledged. To Professor Raymond F. Sletto, as adviser, the study's design owes much. Other methodological guidance of great value has come from Professor Donald Campbell, Professor John K. Hemphill, and Professor Kurt H. Wolff.

Especial thanks are due to friends and colleagues of the author whose counsel in specialized areas of this study has been of inestimable value. Among these are Stuart N. Adams, David Bakan, Robert Bullock, W. F. Cottrell, William Jaynes, Carroll L. Shartle, Ralph Stogdill, Ardith W. Westie, and Frank R. Westie.

To the Social Science Research Council, represented by Elbridge Sibley and Joseph Casagrande, is owed a dual gratitude for the Research Training Fellowship which financed the field work and for encouragement when the outcome of the study appeared in doubt.

Most important of all to completion of this research was the cooperation of the railroad men, employees and officials of the railroad companies and members of the Brotherhood of Railroad Trainmen.
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CHAPTER I
INTRODUCTION AND OBJECTIVES

Where technological change is the rule rather than the exception, as in present-day America, little public attention is given to many important and far-reaching changes. Such facts as these—that Americans increased their use of electricity more than 100 percent in the single decade 1940-1950, or that American farmers put into operation more than two million tractors in the same decade as against one and one-half million in all previous time—may not even come to the attention of many social scientists. Yet these statistics, and others like them, are solid evidence of the rapidity and pervasiveness of current technological change.

Some technological changes come to the nation's attention in the form of industrial conflicts. Of such a nature is the advent of the multiple-unit diesel-electric locomotive, now rapidly replacing the steam engine on U.S. railroads. This is the technological change with which this study is concerned.

Technology and the Railroads

In 1940 there were 40,041 steam and 797 diesel-electric locomotives in service on Class I railroads of the Uni-

In 1950 there were 25,640 steam locomotives in service, and 14,047 diesel-electric units. In the single year 1940 there were installed in service 120 steam engines and 281 diesel-electric units. In 1950 there were installed only 12 steam engines and 3,191 diesel-electric units. Further, although numerically the diesel locomotives in service are still outnumbered by steam and other types of locomotive power, the diesels haul about two-thirds of the total passenger miles and more than one-half of the gross ton-miles of freight.

The segment of the railroad industry known as the "coal-hauling roads", in an effort to protect the large volume of business afforded by the coal industry, has attempted to meet the challenge of the diesel by the construction of large coal-burning steam turbine engines. These do not meet the diesel-electric locomotive in flexibility. A single diesel unit, coupled to a train of 30 cars, can haul the freight at an economical rate. Moreover, when necessary, four diesel units can be joined together to pull a train of

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2Class I railroads, according to the Interstate Commerce Commission's classification, are those with annual revenues above $1,000,000. They operate 95 percent of mileage, employ 95 percent of railroad workers, and haul more than 99 percent of rail traffic.


Table I. Number of New Diesel-Electric Locomotive Installations and Number of Workers Employed by Class I Railroads in the U.S., 1940-1950

<table>
<thead>
<tr>
<th>Year</th>
<th>New Diesel Units Installeda</th>
<th>Workers Employedb</th>
</tr>
</thead>
<tbody>
<tr>
<td>1940</td>
<td>281</td>
<td>1,026,848</td>
</tr>
<tr>
<td>1941</td>
<td>469</td>
<td>1,139,925</td>
</tr>
<tr>
<td>1942</td>
<td>412</td>
<td>1,270,687</td>
</tr>
<tr>
<td>1943</td>
<td>438</td>
<td>1,355,114</td>
</tr>
<tr>
<td>1944</td>
<td>918</td>
<td>1,414,776</td>
</tr>
<tr>
<td>1945</td>
<td>786</td>
<td>1,419,505</td>
</tr>
<tr>
<td>1946</td>
<td>624</td>
<td>1,359,263</td>
</tr>
<tr>
<td>1947</td>
<td>1,328</td>
<td>1,351,863</td>
</tr>
<tr>
<td>1948</td>
<td>2,254</td>
<td>1,236,597</td>
</tr>
<tr>
<td>1949</td>
<td>2,827</td>
<td>1,192,019</td>
</tr>
<tr>
<td>1950</td>
<td>3,191c</td>
<td>1,220,784</td>
</tr>
</tbody>
</table>

aAdapted from Railroad Transportation, A Statistical Record, 1911-1949, Bureau of Railway Economics, American Association of Railroads, p. 17.

bIbid., p. 22.


200 cars and still outperform the largest of the new steam locomotives, for which operating costs are relatively constant no matter how many cars are hauled.

Table I indicates the trend toward complete dieselization since 1940 of the Class I railroads, with resultant contrasting employment figures.

Fuel costs for diesel locomotives are normally about one-half that of steam engines. Maintenance cost with diesels varies from one-half to one-fifth of that required for steam engines. When an engine must be placed in the heavy
repair shops, the time lost from road service averages two days for the diesel, and about ten days for the steam locomotive. By the combination of operating economy and increased hauling, the diesel locomotive can pay for itself in about three years.5

The crucial human aspect of the dieselization of American railroads, with which this study deals, is reflected in such facts as these: (1) Longer trains mean fewer trains; and (2) Fewer trains mean that fewer workers are required to operate the trains.

Where dieselization is substantially accomplished, as on the railroads with which this study deals, the remaining railroad employees are no longer threatened with loss of job. The most common effect is that, through reducing the trainman force, men who once held jobs securely as passenger conductors are now freight conductors or even workers on the "extra board". Many men who previously held day-shift jobs have been "bumped down" to night work.

Exploration of the Problem

The present research is based upon the findings of an exploratory study of the reactions of railroad workers to technological change.6 Some pertinent facts discovered

5Foregoing data from E. A. Foster, manager, application engineering, Fairbanks, Morse and Co., in correspondence.

in that study, supplemented by more recent observations, remain basic to an adequate understanding of the social nexus in which this particular technological change--with its concomitant effects--is taking place.

The Railroad Culture

One of the important documented facts about the railroad population studied in this research is that railroading has socio-cultural aspects which produce distinctive and stable behavior patterns. This characteristic makes railroading a particularly fruitful laboratory for studying social change or the effects of technological change.

A thorough examination of the fictional and semifictional literature of railroading and personal contacts with railroaders in their social as well as work activities, supplemented by study of railroad union and trade publications, confirms the impression that railroading, as an occupational sub-culture, is reminiscent of the craft society which preceded the mass-production era.

Fred Cottrell includes a 25-page glossary of "railroadese" (terminology used by railroaders which is meaningless to those outside the occupation) in his book The Railroader. Samples of this jargon are "hogger" (engineer), "Brains" (conductor), "deadhead" (passenger), "white eye" (clear track

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semaphore signal), and "old head" (old railroader).

Cottrell reports an engineman's description of a run to illustrate:

"The shack brought me the flimsies, the skip­per gave me the highball, and we were on our way. Then a dumb hoghead on a work train reached into his pocket and got five minutes of my time. He didn't clear the block and when I hit it I had to bighole her or run a red board."

The turn-over for railroad employment in the operating services has been relatively low in the past. "Once a railroader, always a railroader" is a statement almost universally current among men on the job. The operation of seniority rules and the investment in pension and insurance funds tends to keep men in the occupation. Railroaders tend to come from "railroading families."

Several factors contribute to the relative homogeneity of the railroad population in the operating services. First in importance is the fact that a railroader performs a job which impinges on his activities 24 hours a day, seven days a week. The rule "First in, first out" means that a man in road service is subject to call to work at almost any time, depending upon operating needs. This irreg-

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8Cottrell, op. cit., p. 101. Cottrell translates this into layman's language thus: "The brakeman brought me the orders and the conductor signaled to go ahead. But the engi­neer of a work train tried to get to a passing track beyond that which he could reach in time to leave the automatic block signals showing a clear track... I was required to make an emergency stop or pass this signal."
ularity of hours is endorsed as a "good thing" and con-
demned as a "bad thing" by substantially equal numbers of workers. 9

Secondly, the strong union organization of the oper-
ating services has tended to weld together strongly this
group of workers by such means as publications and benefit
programs. Third, the factor of mutual interdependence in
responding to the paramount demand of keeping "on time" or
"on schedule" generates strong identifications. Finally,
one must consider the stabilizing influence of the slow rate
of technological change on the railroads before the 1940's. 10

Despite the technological superiority of diesel power
over steam power, the railroader—individually and in his
union groups—has balked at the threat of unemployment,
changed working conditions, and the gradual passing away of
the symbol of his occupation, the thundering steam engine.
This losing battle is certain to leave its marks on the indi-
vidual railroader, his family, and his community.

Major Variables of the Study

The exploratory study indicated that two factors
might be crucial in determining railroaders' reactions to
the diesel technology. The following hypothesis seemed ten-
able in the light of the findings of the original study:

9Westie, op. cit., pp. 13-15
10Westie, op. cit., p. 59.
1. An unfavorable attitude toward the diesel locomotive is correlated positively with high seniority, provided that the influence of identification or ego-involvement in the railroad group is held constant, and

2. The factor of high identification or ego-involvement is a substantial element in job satisfaction.

In the exploratory study, the measurement of favorable or unfavorable attitude toward diesels was inferred from the degree of accuracy of a worker's judgments about the relative efficiency of the two types of power. It was assumed that men who made judgments such as "A steam engine will outpull a diesel", in direct contradiction of fact, were unfavorably oriented toward the diesel.

The degree of identification of the railroader was measured in the exploratory study by judges' evaluation of responses to such open-end questions as: "Is it true that a railroader will always go back to railroading? Why?"

In the case of both the diesel-attitude and ego-involvement schedules, it was concluded that measures used in the pilot study were inadequately constructed for accurately gauging these differences, even though statistically-significant differences were found between high and low seniority groups and between high and low "ego-involved" groups.

11See Ch. II, p. 13 of this study.

12See Ch. II, pp. 13-14 of this study.
The basic variables of the research problem having been defined by the pilot study, two tasks were projected for the current research. The first was to develop reliable and refined measures of the basic variables: attitudes toward diesel locomotives and identification of the worker with railroading. These variables should in turn be related to each other and to various biographical factors, and to a previously-validated scale designed to measure job satisfaction.

The second major task was to apply the scales to gather insights into the effects of dieselization on a community heretofore almost entirely dependent on railroading for its existence. This community will be designated in the study as "Terminal".
CHAPTER II
CONSTRUCTION OF THE ATTITUDE SCALES

Two hypotheses were tested in the pilot study of 1949. The first of these was stated: "Workers in the population most affected by the new technology will tend to be proportionately less objective about the situation with respect to (a) the speed of the transition from steam to diesel and (b) the comparative advantages and disadvantages of diesel power." ¹

The 81 respondents were asked in the original study to indicate the percentages, respectively, of steam and diesel engines then in operation, and to compare the hauling capacity of the two types of power. It was found on four of ten items that the judgments of the low seniority men, who were the most affected materially by the new technology, were significantly different statistically from those of the high seniority men who were the least affected. The differences on the other six items used to measure attitudes toward the diesel engine, while not significant even at the ten percent level of confidence, were found to substantiate the validity of the above hypothesis in terms of the direction of the responses. Had there been a more adequate and more refined measurement of attitudes toward dieselization, it is

likely that a greater number of significant differences could have been found.

The second hypothesis in the original study stated: "Judgments about the foregoing (i.e., about the merits of the diesel vs. the steam engine) will be conditioned by a state of feeling about their group which we designate provisionally as 'ego-involvement in the group'." Two judges, working independently, classified the respondents into "ego-involved" and "non-involved" categories on the basis of responses to five open-end questions in the schedule. To aid in this classification, an operational definition of the concept of ego-involvement in the group was presented to the judges as follows:

Ego-involvement in a group is a state of feeling about a group which conditions behavior through identification of the group's values and norms with the individual's concept of self. This phenomenon is reflected by the railroader in the responses which indicate he feels his group occupies an exclusive and special status in society and that his job, therefore, is one which demands special skills and responsibilities. He takes just pride in the dedication of his group to public service. Ego-involvement is often reflected by the belief that there is something mystically "fascinating" about his occupation; he expresses this by the statement: "It gets in your blood."  

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2 Westie, op cit., p. 12.
3 Westie, op. cit., p. 89.
Using this definition, the judges independently rated each of the respondents on the five items reflecting identification with railroading, one at a time. From this, a total "ego-involvement score" was derived. Following is a sample item and an illustration of how the judges proceeded:

EXAMPLE: Is this true: "A railroader will always go back to railroading."? Yes No

Why?

An example of the ego-involved individual's response would be a "Yes". In answer to the question "Why?" he would say, "I don't know. They always do. Can't get away from that train whistle--gets in your blood, I guess."

The non-involved person might either answer "No" to the question, or agree, with the qualification that "That's all he knows. Nobody else would hire him."

On the basis of the answer and the respondent's reason for it, the judges classified all respondents as ego-involved or non-involved. On only three out of ten items were there statistically significant differences between ego-involved and non-involved groups on the respective merits of steam and diesel power. Again, however, the direction of the differences on the remaining seven items seemed to uphold the reasonableness of the hypothesis which implied that "the highly ego-involved individual will be swayed at times by his identification with the symbol of railroading, the steam engine, irrespective of the effects of the technology."
These results indicated a second time that if the concept of ego-involvement or identification could be measured more precisely, the differences between groups divided according to this criterion would be highly significant.

Selection of Items for the Scales

Six items in the pilot study asked respondents to list advantages and disadvantages of the diesel for the workers, the owners, and the public. From the 61 schedules obtained from road and yard trainmen in this study, all comments, pro and con, regarding the merits of diesel engines were extracted. These items were edited to make simple, declarative sentences. After eliminating duplication, 74 items relating to comparisons of diesel and steam locomotive power remained, to make up Part I of the pre-test questionnaire.

As mentioned, there were in the original pilot-study schedule five items which were judged to be closely related to degree of ego-involvement or identification with railroading. These items are as follows:

2. Tell me in your own words: what is a railroader?

Do you include: pullman porter  telegraph operator  shopman  section gang? ?

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4Westie, op. cit., p. 81

5Care was taken in editing these statements to keep them easily readable, non-academic, spontaneous, and unambiguous, so far as possible.
3. Are you proud to be a railroader? Yes____ No____
a. Why?

5. How did you feel about railroading when you first started?
a. Why?

6. How do you think younger men feel about railroading today?
a. Why?

7. Is this true: "A railroader will always go back to railroading"? Yes ____ No ____
a. Why?

Every statement made in response to these questions by the 61 railroad trainmen, together with the five questions themselves, was edited into a simple declarative sentence. After elimination of duplicate items, 50 items remained to make up the identification scale for the pre-test questionnaire.

The purpose of the pre-test questionnaire was to answer three major questions:

1. Does the questionnaire format allow the maximum range of response?

2. Which items provide the largest dispersion of responses?

3. Will these scale items obtain reliable responses?

Two formats were devised for the diesel attitude questions. Format A stated:

Railroaders and Diesel Power

Here are some statements about diesel and steam locomotive power. These statements have been made to me by railroaders like yourself at
various times. I would like you to read each statement and circle "Y" if you agree with the statement; or circle "N" if you do not agree. There are no right answers, because it is your opinion that counts.

Format B read as follows:

**Railroaders and Diesel Power**

Here are some statements about diesel and steam locomotive power. These statements have been made to me by railroaders like yourself. I would like you to read each statement and if you feel there is any truth at all in the statement to circle the Y (Yes). If you feel there is no truth whatever in the statement, circle N (No). There is no right or wrong answer really because it is your opinion that counts here.

Format A was adapted to introduce the identification scale mailed in the pre-test with both forms of the diesel attitude scale. It read:

Now I would like you to read some statements about railroaders and railroading as a job. I would like to have you circle "Y" if you agree with the statement and "N" if you do not agree with the statement.

Twelve biographical questions were included with the two scales. These related to variables which might prove to be relatively important determinants of the attitudes which the scales were designed to measure.

**The Pre-Test Sample**

The pre-test schedules could not be administered to any group other than railroad men in train service because
of the specialized nature of the questions. The sample had to be one which could be contacted readily, with the expectation of a maximum return for a minimum of effort. To attain this end, the cooperation of the Brotherhood of Railroad Trainmen was enlisted, on both the local and national level.6

With the help of the local chairman of the BRT, the roster of the original sample was brought up to date to remove names of men since retired or terminated. These men had been interviewed personally two years previously, had some understanding of the purposes of the study, and would be willing to fill out and return the questionnaire promptly, in the judgment of the researcher.

The mimeographed pre-test scales and biographical questions, totaling six pages, accompanied by a typewritten letter from the researcher and a multilithed copy of a letter from the president of the BRT national lodge, were mailed to the 32 qualified individuals from the original sample of the pilot study. These men originally had been selected, using a table of random numbers, from a roster of some 270 road trainmen on a particular division of a railroad operating in a large midwestern city. Approximately half of these

6A letter was written to the Grand Lodge, Brotherhood of Railroad Trainmen, to request a personal conference. An appointment was arranged with the president, the executive secretary, and the research director. Credentials from the Social Science Research Council and the Sociology Department were presented to these officials. The BRT president wrote a third letter recommending cooperation of BRT members in the study. The three letters are reproduced in Appendix A.
men worked in the city in which the study originated, and the other half in a large city some 200 miles away, at the other end of the division. The scope of the pilot study was such that only men living at the "home" terminal were included in the sample, so this factor was also present in the pre-test sample.

With approximately a 50 percent return expected, five additional questionnaires were given to men in the same city who worked for the same railroad, but in a different division. Three of these were returned. With the 17 returned from the original sample, the pre-test sample consisted of 20.

Analysis of the Pre-Test Scales

The first question to be answered by this pre-test was the question of format for the diesel attitude scale. Of 74 pre-test items, only 15 could be judged to lie in the realm of opinion or preference. To the remaining 59 questions, factual answers were available, and responses could well depend on differential knowledge the respondents might have about the diesel engine. Conversely, the identification items were statements largely of belief or opinion, with little factual information required to answer them.

Although the selection of items to be included in the final diesel attitude scale was dependent on the total re-

7 This was an arbitrary judgment based on the cooperation level encountered in the pilot study.
response pattern, the pre-test revealed that Format B yielded a greater dispersion of responses than Format A.

Of the 40 diesel attitude items finally selected, 32 had a greater dispersion of response with the Form B introduction. Dispersion was greater on Form A for four items, and four more items were substantially equal in response dispersion.

It was concluded from these results that when an individual was asked to respond in a categorical manner to an item requiring some factual knowledge, he tended to let rational processes dictate his response. If he were given some degree of freedom, as in Form B, the item became more attitudinal, and non-rational elements helped form his judgment.

It was also noted in the pre-test of the diesel attitude scale that on a total of 15 items, the predominant answer reversed itself with the change from one form to another. For example, with Form A, the majority of respondents would answer "Yes" to certain items; with Form B, the majority of respondents would answer "No" to the same items. As a matter of methodological interest, in the 15 items where this occurred, it was found that the younger men, with seniority dating since 1939, were responsible for the shift on nine items. When the young or low-seniority respondents were separated from the pre-test sample for comparison on the two forms--six responding to each form--the same reversal was
found to occur on seven additional items. The content of the items offered no clue to this behavior, but the fact that 20 percent of the items were affected seemed to justify the use of even a small pre-test before deciding on format.

The second question to be answered by the pre-test concerned identification of the items, irrespective of format, which provided the greatest spread of response. It appeared that 40 items would be sufficient to cover the range of attitudes toward the diesel.

The distribution of responses on the 40 selected items is shown below:

<table>
<thead>
<tr>
<th>Percentage of 20 Responses in One Dichotomous Category</th>
<th>Number of Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>80</td>
<td>4</td>
</tr>
<tr>
<td>75</td>
<td>5</td>
</tr>
<tr>
<td>70</td>
<td>5</td>
</tr>
<tr>
<td>65</td>
<td>7</td>
</tr>
<tr>
<td>60</td>
<td>10</td>
</tr>
<tr>
<td>55</td>
<td>7</td>
</tr>
<tr>
<td>50</td>
<td>2</td>
</tr>
</tbody>
</table>

The 40 items yielding the largest dispersion of responses were then placed in a format giving the respondent an opportunity to circle one of four possible answers to each statement about the diesel: True, Probably True, Probably False, and False. Inasmuch as 20 respondents in the pre-test used the "undecided" category only 51 times
on the 40 items selected, this category was eliminated from the final scale. The decision to offer a wider response choice was made because of the demonstrated ability of the wide choice in obtaining dispersion of response, as discussed earlier.8

The Identification Scale

The only question to be answered in selection of items for final use in the identification scale was that of spread of response. To cover the range of this attitude, approximately 25 items were judged to be necessary. An arbitrary decision to select only those items that had yielded at least three responses disagreeing with the majority responses resulted in selection of 23 items. The distribution of responses on these identification items follows:

<table>
<thead>
<tr>
<th>Percentage of 20 Responses in One Dichotomous Category</th>
<th>Number of Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>85</td>
<td>2</td>
</tr>
<tr>
<td>80</td>
<td>1</td>
</tr>
<tr>
<td>75</td>
<td>1</td>
</tr>
<tr>
<td>70</td>
<td>4</td>
</tr>
<tr>
<td>65</td>
<td>5</td>
</tr>
<tr>
<td>60</td>
<td>5</td>
</tr>
<tr>
<td>55</td>
<td>3</td>
</tr>
<tr>
<td>50</td>
<td>2</td>
</tr>
</tbody>
</table>

8See p. 17, paragraph 2.
One of the 23 items so obtained was eliminated because its content seemed to be "loaded" in favor of one of the hypotheses of the study, thus leaving a total of 22 items. Three more items were added on which there had been complete pre-test agreement. These were inserted as "buffer" items, not considered a part of the scale. R. J. Wherry of the Ohio State University Psychology Department and Ralph Stogdill of the Ohio State Leadership Studies have indicated in conversation with the researcher that the occasional insertion of an item on which the respondent can make a firm judgment with no hesitation makes for less indecision on items which may be harder to answer. This seemed a priori to make sense. As there was room for three more items in the proposed 25-item scale, three such were added.

Reliabilities of the Pre-Test Scales

A simple conventional split-half reliability check was run on the two pre-test scales. The identification scale yielded a split-half reliability of .34. Applying the Spearman-Brown formula, the estimated reliability coefficient of the complete scale became .91. The split-half reliability coefficient for the diesel attitude scale was .77; when the Spearman-Brown formula was applied, it became .87.

Question No. 5 on the pre-test instrument, with a "Yes" or "No" response asked, was stated: "There's a lot of security in railroading." In spite of the fact that there were 16 "Yes" and four "No" answers, meeting standards for acceptance, it was felt that the close relationship between security and seniority might cause answers to be related to seniority of the respondent.
CHAPTER III
INTERRELATIONSHIPS AMONG VARIABLES IN A PRELIMINARY SAMPLE

Analysis of the reliability and validity of the final scales required the selection of a sample of railroad workers alike with respect to certain characteristics. The pilot study had indicated definite differences of attitude among men according to whether they worked in road or yard service. It also was evident that differences in attitude existed among men who were employed by different railroad companies and even on different divisions of the same railroad. The sample then had to be one which was homogeneous with respect to the following characteristics:

1. It should contain only road trainmen.\(^1\)
2. It should be selected from a single railroad.
3. It should be drawn from a single division of the railroad.

The limitations of a one-man research project required further that the sample be relatively accessible. For this reason, the seniority roster from which the final sample was drawn was one of the four from which the sample for the exploratory study was selected. This roster met the above three requirements.

Since all railroad trainmen are members of the Brotherhood of Railroad Trainmen, the same credentials used

\(^1\) Road trainmen are conductors and brakemen on both passenger and freight runs making runs between division points.
in the pre-test study were duplicated for use in the final collection of data. Contact was established with the BRT local chairman of road trainmen for a particular railroad in a large midwestern city. The local chairman provided the most recent seniority roster, carrying 250 names.

From this roster were dropped the names of men who had died, quit, or been retired on pension. Further, it was decided to eliminate the 32 men on the roster who had participated in the 1949 pilot study and the pre-test of the new questionnaire. Also eliminated were the names of two men who were carried on the roster, but who were currently officials of the railroad. In addition, nine men could not be located despite efforts of union officials, who felt they had either moved recently without notification, or were men who customarily live as transients in railroad hostels of Y.M.C.A. hotels. There was a total of 77 eliminations, classified as follows:

<table>
<thead>
<tr>
<th>Reason for Elimination from the Sample</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Member of original sample of 1941</td>
<td>32</td>
</tr>
<tr>
<td>Quit</td>
<td>24</td>
</tr>
<tr>
<td>Pension</td>
<td>7</td>
</tr>
<tr>
<td>Died</td>
<td>3</td>
</tr>
<tr>
<td>In official positions</td>
<td>2</td>
</tr>
<tr>
<td>No address available</td>
<td>9</td>
</tr>
<tr>
<td>TOTAL</td>
<td>77</td>
</tr>
</tbody>
</table>

\(^2\)See p. 16.
Mailing of the Questionnaire

Of the 173 questionnaires mailed, 125 were sent to men in or near the originating point of the division. The other 48 were mailed to men on the same roster who lived in a city 200 miles distant at the terminal point of the division.

The questionnaire was composed of the two scales designed to measure (a) identification and (b) attitudes toward the diesel locomotive, (c) a previously-validated job satisfaction scale, and (d) a page of biographical questions. The questionnaire was mailed to all respondents together with a letter explaining the study's purposes and a multilithed copy of the letter from the BRT president.

A total of 84 out of the 173 railroaders to whom questionnaires were mailed returned the questionnaires within two weeks. A follow-up letter was then sent, and 17 more railroaders responded. One of the initial returns was blank, leaving a sample of 100 to be analyzed.

Analysis of the Scales

Two sets of IBM cards were punched. One set contained the scores for each item on the identification and diesel-attitude scales, while the other contained the coded biographical data and the job satisfaction total score.

3 Bullock, Robert, Social Factors Related to Job Satisfaction, Bureau of Business Research, The Ohio State University, 1952.
In punching the cards, nine cases had to be omitted because too many questions were unanswered, thus leaving a total of 91 cases to analyze.

**Item Analysis**

The tetrachoric correlation method was used to make an item analysis of the scales. These coefficients are comparable to product moment coefficients, because the scale scores are known to be continuous, and inspection of the distribution of these scores reveals close approximation to normal distribution. It is recognized that a tetrachoric coefficient is generally lower than a product moment coefficient, but inasmuch as relative correlation is the primary purpose, this fact is not important.  

Results of this analysis can be seen in Appendix C, where the proportions of high-low responses and the tetrachoric correlations are shown for every item in both scales. It is recommended by the authors of computing diagrams that no item be kept in the scale if there is less than a 20 percent response in the least frequent category. For the purposes of this study, a correlation of .30 or better was

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A consideration in the selection of the tetrachoric correlation method is its relatively easy computation when the data are punched on IBM cards and computing diagrams are used. See L. Chesire, M. Saffir, and L.L. Thurstone, Computing Diagrams for the Tetrachoric Correlation Coefficient, University of Chicago Bookstore, Chicago, 1933.
required before an item was kept in the scale. On this basis it was indicated that items 1, 9, 10, 12, 16, and 25 should be dropped from the final identification scale, and that items 1, 12, 17, 19, and 27 should be dropped from the final diesel-attitude scale. These shortened scales will hereafter be referred to as the abbreviated scales.

**Reliabilities of the Scales**

Split-half reliabilities were computed using both the original scales and the abbreviated scales. The Pearsonian coefficient of correlation for the original identification scale was .61. After applying the Spearman-Brown estimation formula, the reliability coefficient became .76. The reliability coefficient for the abbreviated identification score was .62; after application of the Spearman-Brown formula it became .77.

For the original diesel-attitude scale, the reliability coefficient was .84, and after the correction for attenuation was .91. However, for the abbreviated scale, the coefficient of reliability was .83 before the Spearman-Brown formula was applied and .90 afterward.

Although the scales were shortened with no substantial loss in reliability, it was decided to include both sets of scores in all future computations in order to give the most complete possible comparison of the long and the abbreviated forms of the two scales.
Relationships Among the Scales and Biographical Items

Before computing the product moment correlation coefficients, a correction of the raw data was made, because some respondents did not answer all the items on the scales. This was done by dividing the scale score by the total number of items to which responses were made, and using the mean scale score carried out to two decimal places. This corrected score was then used in all computations.

Table 2 indicates the association between the major variables of the study as expressed by product moment correlations. Inspecting these as computed, there appear the expected correlations between the abbreviated and non-abbreviated scores of the diesel-attitude and identification scales. Some of the other relevant relationships that are statistically significant bear discussion.

First of all, the hypothesis that there is a positive relationship between seniority and negative attitude toward the diesel-electric locomotive is not borne out. In fact, the only statistically significant relationships of seniority to any other variables are its negative relationship to years of schooling and its positive relationship to age, both of which are to be expected.

The significant correlation between job satisfaction and identification offers some interesting speculative possibilities. It might be argued that the correlation is
<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>AGE</th>
<th>YEARS OF SCHOOL</th>
<th>SENIORITY</th>
<th>JOB SATISFACTION</th>
<th>IDENTIFICATION UNABBREVIATED</th>
<th>IDENTIFICATION ABBREVIATED</th>
<th>DIESEL ATTITUDE UNABBREVIATED</th>
<th>DIESEL ATTITUDE ABBREVIATED</th>
<th>NUMBER OF RAILROAD RELATIVES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. AGE</td>
<td>-.68*</td>
<td>.56*</td>
<td>.21#</td>
<td>.33*</td>
<td>.33*</td>
<td>.33*</td>
<td>.02</td>
<td>.01</td>
<td>-.05</td>
</tr>
<tr>
<td>2. YEARS OF SCHOOL</td>
<td>-.68*</td>
<td>-.30*</td>
<td>.11</td>
<td>-.29*</td>
<td>-.33*</td>
<td>.22#</td>
<td>.18</td>
<td>.04</td>
<td>-.04</td>
</tr>
<tr>
<td>3. SENIORITY</td>
<td>.56*</td>
<td>-.30*</td>
<td>.00</td>
<td>.06</td>
<td>.07</td>
<td>.07</td>
<td>.04</td>
<td>.07</td>
<td>.04</td>
</tr>
<tr>
<td>4. JOB SATISFACTION</td>
<td>.21#</td>
<td>.11</td>
<td>.06</td>
<td>.56*</td>
<td>.52*</td>
<td>.08</td>
<td>.12</td>
<td>.04</td>
<td>.04</td>
</tr>
<tr>
<td>5. IDENTIFICATION UNABBREVIATED</td>
<td>.33*</td>
<td>-.29*</td>
<td>.06</td>
<td>.56*</td>
<td>.96*</td>
<td>-.14</td>
<td>-.10</td>
<td>.03</td>
<td></td>
</tr>
<tr>
<td>6. IDENTIFICATION ABBREVIATED</td>
<td>.39*</td>
<td>-.33*</td>
<td>.07</td>
<td>.52*</td>
<td>.96*</td>
<td>-.11</td>
<td>-.06</td>
<td>.04</td>
<td></td>
</tr>
<tr>
<td>7. DIESEL ATTITUDE UNABBREVIATED</td>
<td>-.02</td>
<td>.22#</td>
<td>.04</td>
<td>.08</td>
<td>-.14</td>
<td>-.11</td>
<td>.97*</td>
<td>.05</td>
<td></td>
</tr>
<tr>
<td>8. DIESEL ATTITUDE ABBREVIATED</td>
<td>.01</td>
<td>.18</td>
<td>.07</td>
<td>.12</td>
<td>-.10</td>
<td>-.06</td>
<td>.97*</td>
<td>.07</td>
<td></td>
</tr>
<tr>
<td>9. NUMBER OF RAILROAD RELATIVES</td>
<td>-.05</td>
<td>-.04</td>
<td>.04</td>
<td>.04</td>
<td>.03</td>
<td>.04</td>
<td>.05</td>
<td>.07</td>
<td></td>
</tr>
<tr>
<td>MEAN</td>
<td>42.6</td>
<td>10.7</td>
<td>93.4</td>
<td>18.6</td>
<td>47.5</td>
<td>34.3</td>
<td>112.0</td>
<td>97.7</td>
<td>2.7</td>
</tr>
<tr>
<td>STANDARD DEVIATION</td>
<td>10.4</td>
<td>1.9</td>
<td>45.8</td>
<td>5.4</td>
<td>10.25</td>
<td>8.6</td>
<td>17.6</td>
<td>18.5</td>
<td>3.2</td>
</tr>
</tbody>
</table>

* Statistically significant at the .01 level of confidence
# Statistically significant at the .05 level of confidence
spurious inasmuch as the content of the job satisfaction and identification scales is similar. Examination of the content of both scales seems to indicate that the similarity is not very pronounced. Further, it could be argued that even were the contents of the two scales similar, that there is merit in the highest possible degree of indirectness in a scale designed to measure job satisfaction.

A further relationship might be expected between job satisfaction and age, inasmuch as age and seniority are related. We assume that workers who stay with a job stay in part because they are satisfied with it. Also, it makes sense to assume that age, which is negatively correlated with schooling, should be positively associated with job satisfaction. In other words, the man who is the older has had less school than the younger man, and he is also more satisfied with his job. However, the factor of identification is a stronger indication of both these factors than the scores on the job satisfaction scale. This is interpreted as substantiating some face validity for the identification scale.

There remains one final significant correlation in this matrix. This is the relationship between the abbreviated diesel-attitude score and the number of years in school. It is a tenable supposition that the more education an individual has, the less antagonistic he will be to dieselization.
Table 3 records the biserial correlations between those variables which seem to be expressed best dichotomously and the continuous variables of Table 2.

**Table 3. The Relationships Between Identification, Diesel Attitudes, Job Satisfaction, and Selected Biographical Data of 91 Railroad Trainmen as Shown by Point Biserial Correlation Coefficients**

<table>
<thead>
<tr>
<th>Years on Railroad</th>
<th>Diesel Experience</th>
<th>Diesel Reading</th>
<th>Railroad Family</th>
<th>Father on Railroad</th>
<th>Grandfather on Railroad</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seniority</td>
<td>.68*</td>
<td>-.03</td>
<td>-.04</td>
<td>-.04</td>
<td>-.22#</td>
</tr>
<tr>
<td>Job Satisfaction</td>
<td>.16</td>
<td>-.02</td>
<td>.02</td>
<td>-.06</td>
<td>-.24#</td>
</tr>
<tr>
<td>Identification</td>
<td>.31*</td>
<td>-.03</td>
<td>.05</td>
<td>.10</td>
<td>-.08</td>
</tr>
<tr>
<td>Abbreviated</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diesel Attitude</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abbreviated</td>
<td>-.01</td>
<td>.18</td>
<td>.16</td>
<td>-.06</td>
<td>-.05</td>
</tr>
<tr>
<td>Identification</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unabbreviated</td>
<td>.26#</td>
<td>-.01</td>
<td>-.02</td>
<td>.13</td>
<td>-.08</td>
</tr>
<tr>
<td>Diesel Attitude</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unabbreviated</td>
<td>-.01</td>
<td>.18</td>
<td>.20</td>
<td>-.05</td>
<td>-.06</td>
</tr>
<tr>
<td>Number of Related</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Railroaders</td>
<td>-.03</td>
<td>.10</td>
<td>.14</td>
<td>.51*</td>
<td>.37*</td>
</tr>
<tr>
<td>Years of School</td>
<td>-.61</td>
<td>.25#</td>
<td>.14</td>
<td>.23#</td>
<td>.27*</td>
</tr>
</tbody>
</table>

*Statistically significant at the .01 level of confidence
#Statistically significant at the .05 level of confidence
The series of correlations shown in Table 3 was computed by the following formula: \[ r_p = \frac{M_h - M_l}{S_t} \cdot \sqrt{p \cdot q} \]

Where:
- \( M_h \) = mean score on the continuous variable of the higher group of the dichotomy
- \( M_l \) = mean score on the continuous variable of the lower group of the dichotomy
- \( S_t \) = the standard deviation on the continuous variable for the total group
- \( p \) = proportion falling in the high group on the dichotomized variable
- \( q = 1 - p \)

It was felt that the assumption of continuity underlying the dichotomized variable was met, and that the assumption of normal distribution of the variable in the sample was approximated.

The number of years on the railroad and seniority might be expected to intercorrelate highly (.68), and high seniority would be expected to correlate highly with identification (.31). It is logical to expect that the older railroader would have fewer years of formal education (.61). The negative correlation between seniority and having a railroader for a father can be understood in the complexity of the hiring pattern of the railroads. The oldest men on the railroads, those with the most seniority, came into railroading with no help from anyone. After World War I, however, the practice of nepotism on the railroads operated when there was a job open. This practice became particularly marked.

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during the spurt in hiring after 1939. The negative correlation between job satisfaction and having a father who was a railroader may reflect the fact that these younger men were perhaps brought into railroading by parental pressure rather than by choice. The correlation between years of school and diesel experience is indicative again of the fact that much of the total railroading experience on the part of the younger, more educated railroader has been with diesel engines. It seems likely that a person who is willing to spend time reading about diesel engines would be the one more favorably disposed toward them. The men who are related to the largest number of railroaders are most likely to have fathers and grandfathers who were railroaders.

An interesting cluster of significant point biserial correlations are those reflecting the years of schooling and association with railroading relatives. It is possible that these statistics are confirming the subjective impression that railroaders are a vertically mobile group. It may also indicate that railroaders, who were not as disadvantaged during the depression as other workers, did manage to educate their sons.

A definitive test of relationships was sought by computation of partial correlations, holding constant any variable which might be likely to contaminate the true relationship. The highest product moment correlations among the scale scores were put into the partial correlation matrix. These are seen in Table 4.
Table 4. The Relationships Between Identification, Diesel Attitudes, and Selected Biographical Data of 91 Railroad Trainmen as Shown by Partial Correlation Coefficients

<table>
<thead>
<tr>
<th>Variables Correlated</th>
<th>Variable Held Constant</th>
<th>r</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Identification unabbreviated vs. diesel attitude unabbreviated</td>
<td>Job satisfaction</td>
<td>-.218#</td>
</tr>
<tr>
<td>2. Seniority vs. diesel attitude abbreviated</td>
<td>Years of school</td>
<td>.129</td>
</tr>
<tr>
<td>3. Years of school vs. diesel attitude unabbreviated</td>
<td>Seniority</td>
<td>.240#</td>
</tr>
<tr>
<td>4. Seniority vs. diesel attitude unabbreviated</td>
<td>Identification unabbreviated</td>
<td>.052</td>
</tr>
<tr>
<td>5. Identification abbreviated vs. diesel attitude abbreviated</td>
<td>Seniority</td>
<td>-.064</td>
</tr>
<tr>
<td>6. Seniority vs. diesel attitude abbreviated</td>
<td>Identification abbreviated</td>
<td>.071</td>
</tr>
<tr>
<td>7. Identification unabbreviated vs. diesel attitude unabbreviated</td>
<td>Seniority</td>
<td>-.138</td>
</tr>
<tr>
<td>8. Years of school vs. diesel attitude unabbreviated</td>
<td>Age</td>
<td>.273*</td>
</tr>
</tbody>
</table>

*These correlations were selected from the product moment correlation matrix on the basis of the comparative magnitude of the several correlations involved.

*Significant at the .01 level of confidence

#Significant at the .05 level of confidence
Two of these partial correlations are significant at the five percent level of confidence, and one is significant at the one percent level. Schooling seems to militate against unfavorable attitudes toward the diesel, when the factors of age and seniority are held constant. Inasmuch as seniority and age are factors which determine material benefits or disadvantages related with the incoming diesel, holding these variables constant would appear desirable in order to see the true relationship.

Schooling is logically related to favorable attitudes toward an innovation such as the diesel, perhaps because the schooled person would tend to act more in terms of the objective rather than the subjective aspects of the particular technology and its effect on the occupation of railroading.

The significant negative relationship between the identification score and diesel-attitude scores is the one which has been most sought for in terms of the hypotheses underlying this study. The explanation for the fact that job satisfaction had to be held constant in order to obtain a significant relationship might be as follows: The correlation coefficients logically indicate that age is significantly related to both job satisfaction and identification with railroading. The older railroader is torn between conflicting loyalties. He knows the diesel engine is good for the railroad, and if he is to be loyal to his job, he cannot express unfavorable reactions to those things that are
good for railroading. However, he finds the diesel engine anathema because it is an expression of the passing of a way of life which has meant much to him. To the degree that an individual is loyal to the job and the company he works for, he can be expected to react favorably to the diesel engine.

The foregoing data and text indicate that it is possible to measure with reasonable reliability the worker's attitude toward a particular technological change and his identification with railroading as a way of life.

The correlations presented seem to indicate a degree of validity for the scales, inasmuch as logical expectations of the relationships are borne out. The fact that the correlations are generally small is disappointing. Until there is further examination of the utility of the scales in an application to a case study of a typical "railroad community" such as that undertaken in this study in the town designated as "Terminal", it would be best to withhold definitive statements about the value of the instruments.
CHAPTER IV

A CASE STUDY OF A RAILROAD COMMUNITY

The foregoing analyses of the final diesel-attitude, identification, and job satisfaction scales have indicated some significant relationships of the variables measured by the scales, both to each other and to certain biographical data of the railroad sample. If identification and attitudes toward dieselization are measurable factors in a large-city population and on a particular railroad, they should be measurable elements in other communities and on other railroads.

The attitude defined as "identification with railroading" would appear to vary with the degree of direct and indirect participation in groups that can be defined as "railroad-oriented". In addition to on-the-job associations, the railroader finds "railroad-oriented" people in his union lodge, his company-sponsored fellowships, and at times in his neighborhood, fraternal lodge, and family groups. He also receives from his railroad and his union various publications which emphasize and eulogize the attitudes and values associated with railroading.

Attitudes toward diesel engine-power would appear to be related to its immediate direct effect on the material security of the railroad workers, and also to the degree of identification with railroading. The second observation is supported by the statistically significant partial correla-
tion between identification and negative attitudes toward
dieselization, with job satisfaction held constant.

These observations led to the hypothesis that the
same relationships among the variables under investigation
could be found in a more pronounced form in a community that
was (1) almost entirely dependent upon railroading for its
existence and (2) currently influenced by the technological
change from steam to diesel engine-power.

Choice of Railroad Community

The selection of the village here designated as "Ter-
minal" to be the locus for application of the diesel-attitude
and other scales to a rail-culture-imbued population was first
suggested by staff members of the Grand Lodge of the Brother-
hood of Railroad Trainmen. This village met tentatively-set-
up requirements of a population between 3,000 and 5,000, al-
most complete dependence of its working force upon railroad
employment, affiliation with a different railroad from that
of the first sample, and location within a distance permitting
on-the-spot investigation. The final decision to use a Ter-
minal sample was made when it was discovered that rail lines
running from Terminal to an eastern division point were al-
most completely dieselized, with only an occasional steam-
hauled train; and that lines running to a western division
point were predominantly steam-hauled except for an occasion-
al passenger diesel. This presented such fruitful research
possibilities that Terminal became a definite first choice for this part of the study.

The village of Terminal is a small midwestern town with a population of 4,644 persons--5,500 if related population centers within a three-mile radius are included. The 1,300 Terminal homes are supplemented by two 25-room hotels, a motel, the railroad Y.M.C.A., and a few small lunchrooms. There are sufficient general shopping facilities, in the form of about 65 retail stores, to serve the surrounding area. There has been no new industry employing more than ten persons in Terminal for the past 34 years. The railroad is the chief source of employment, supplemented by a rubber-goods plant employing 100 persons, and service industries such as an ice plant, laundry, water and power plant, and the gas company. The scarcity of local employment has resulted in a surplus working force of about 400 persons who commute to work in other towns as much as 30 miles distant.

When entering Terminal from the south, one passes a newly-developed outlying group of one-floor-plan homes, each decorated with a television aerial, called Terminal Heights. At the corporation limits, the architecture of the homes makes a transition to large, well-kept-up, two and three-floor dwellings in the style of the twenties, fronted by large trees. When the wind is blowing from the south and west, the air is as clear as in any rural town.

After six blocks, the business district of some three blocks begins abruptly. The retail stores and lunchrooms
are supplemented by three taverns, a post office, newspaper office, and a theater suggesting by its interior that it may once have been a legitimate playhouse.

Continuing north along the main street and under the railroad viaduct, one is suddenly in a smoke-palled, ramshackle area three by four blocks in size where the small Negro population of Terminal lives.

From the north end of the business district, the physically dominating structures are those of the railroad. The depot, the roundhouse for steam-engine running repairs, the diesel running-repair pits, and the railroad Y.M.C.A. buildings are large and imposing structures.

The high school has been modernized with a large recent addition. Together with several large and well-built churches, it is located just off the main street. A municipal swimming pool and a large baseball park are located at the outskirts of Terminal. Signs over several large converted dwellings are marked Brotherhood of Railroad Trainmen, Eagles, I.O.O.F., V.F.W., and B.P.O.E., indicating some of the social affiliations of the townsmen.

That Terminal is a "railroad town" is apparent to the visitor who sees the predominance of men on the street wearing the striped denim overalls and matching cap of the railroader. That it is also a "company town" is established by such bits of evidence as the school cafeteria's dinnerware stamped with the railroad's name.
On the northwest edge of Terminal is located one of the most modern freight classification yards in the world. It is equipped with car retarders (which have displaced about 100 switching personnel), automatic electrically-controlled switches, yard lights operated by photoelectric cells, a refrigeration plant, communications system, and 53 classification tracks alone. The yards are bordered by the main east-west lines of the railroad.

In spite of the identity of railroad and town, insecurity has faced both town and individual citizens in the past ten years. Perhaps the first overt acknowledgment of this was made when the village Chamber of Commerce published in 1942 an Industrial Survey, a tacit invitation for the location of new industry in Terminal. In the autumn of 1951, Terminal's insecurity was apparent in the concerned comments of its newspaper and businessmen. The prospect of a belt conveyor to carry coal to the Great Lakes shipping centers, later effectively counteracted in the state legislature by the railroad interests, aroused a public meeting at the high school to discuss the issue. According to the Terminal Times, a delegation from the Chamber of Commerce journeyed to the headquarters office of the railroad in 1951 to confer with the president about the system's future plans for the Terminal installation. The assistant editor of the Times asserted that this official did not disclose to the committee
what these were. The Terminal BRT chairman notes that "young heads" or newly-employed railroaders do not move to Terminal with their families, but keep their homes out of town and "deadhead" in to take their runs.

The Terminal trainmaster holds a suspended card in the yardmasters' union, and endorses unionism. He declares willingness to give all negotiated benefits and some additional ones to the men, provided they will help him out when he gets "in a jam."

The Railroad and the Local Press

To obtain a day-to-day understanding of the way in which the railroad impinges on the life of Terminal, a systematic analysis was made of six months' issues of the Terminal Times, the local weekly newspaper, with special attention to its coverage of railroad-related happenings. The six-months period extended from April 24, 1952 until October 17, 1952, the period during which this study was being conducted in Terminal. During these six months, an average of 26 column inches, or one and two-thirds columns of general railroad news, appeared in each weekly issue of 12 or 14 pages. Like many small-town newspapers whose readers subscribe also to a metropolitan regional paper, the Terminal Times gives scant notice to state or national news unless it has a particular local application. Presumably for this reason, the 1952 steel strike, one of the largest railroad-related stories of the year, was not reported as to progress of the
negotiations, except for brief items giving the weekly local employment outlook on the railroad insofar as it was related to the steel strike.

The fixed place of the railroad in the community is evidenced clearly in the *Terminal Times* by the existence of a regular column feature headed "Railroad News". This feature alone is subjectively judged to be equivalent to a week's average coverage of railroad news in a large metropolitan newspaper.

The close identification of the town not only with the railroad as a community institution, but with the specific carrier, is seen in the newspaper's coverage. The railroad's news releases regarding employment, furloughs, revenues, tax payments, and operating records are given news treatment, and such new equipment as the strata-dome cars or new repair shops are given feature coverage. Whenever the president of the railroad or an official inspecting group is scheduled to pass through Terminal, the newspaper either announces or reports it.

Changes in the system are reported minutely, giving the impression that the railroad's facilities are like park property in other cities. If a new book-type ticket is adopted, the freight-house is painted, or new diesel locomotives are installed and steam engines scrapped, the *Times* notes it.

The cooperative attitude existing between the town and the major employer, the railroad, is seen in such incidents
as the *Times* report of the city council's request in April, 1952, that the railroad correct its storage of diesel oil to avoid overflow into the municipal sewage treatment plant. Within a month, the railroad had built a dam to prevent such overflows from hampering the sewage treatment operations. Again, before discontinuing a three-shift crossing watch in a location where fast trains no longer crossed, the railroad officials asked the council's permission, which was granted.

A distinct service aspect existed in many of the *Times* employment reports. Interstate Commerce Commission reports on rail traffic appeared in the paper, together with brief reports on how the steel strike was affecting local employment. When the trainmaster received instructions to furlough men if the strike was not settled in a specified period, the paper carried an advance announcement.

An interesting contrast was noticed in the coverage accorded railroad employee organizations. No union coverage was given, with the exception of a picnic notice, whereas activities of the Railroad Veterans and its auxiliary, both "company" groups, were reported at length.

Throughout the articles concerning railroad news there appeared a discernible warmth. The characteristic long stories of railroad veterans' retirements after long service bear such headings as: "Local Freight House Not Same Place With Veteran Agent Gone." At the end of an account of a "50-year-man's" retirement is this statement: "Railroad offi-
A man with 54 years of seniority, retiring as an engineer, is quoted in the Times as recalling that as a youngster "the only things I ever thought about were railroading and baseball." When he was hired as a brakeman, in the days of the "Lincoln" coupling, the height of which had to be adjusted manually, he recollected, "In those days it wasn't too difficult to identify a brakeman—they were usually minus a leg, hand, or arm." At the end of 15 years as an engineer, the final eight in diesel service, he evaluated the engines thus: "Diesels are a fine engine. They're cleaner, more comfortable, and more efficient. But they seem to lack the 'soul' and personal contact with the crew that the steam engines had. It's hard to explain, but it just seemed that when you stuck your head out of the cab of a steamer and heard the hissing of the valves, you could hear the engine talking to you, saying, 'Come on, let's go,' or if you were on an extra hard pull, saying, 'We'll do it, just keep plugging.' Of course, you had to work when you were on a steam engine!"

Terminal businessmen's attitudes are reflected in the fact that almost all Terminal merchants bought space on program booklets for the Veteran Employees association state grand convention. More advertising came from Terminal than from any other city.

Technological innovations are freely reported in the Times. Two long articles reported the try-out in Chicago of television as an aid to railroad yard operations. The try-out
of new-type diesels, and the increasing use and performance of diesels in regular use are frequently reported.

The second large group of railroad-associated news items printed in the Terminal Times in the period April-October, 1952, are the reports of a community-wide fund drive for the purchase of stock in the Terminal Industrial Development Corporation, a civic group organized expressly to sell stock to Terminal citizens, the proceeds to be available for factory construction by a new industry, on a loan basis. An out-of-town concern planning to build a factory employing 100 people chose Terminal as a prospective site.

The development committee's project, from its inception in May, 1952, until near-completion of its $100,000 goal in September, occupied an average of 22 column inches, or one and one-half columns per week in the 12-14 page Terminal Times. So indicative are the newspaper reports of the temper of this community campaign to escape the fate of a "ghost town" that the coverage will here be reported as related to the changing railroad technology.

Ever since 1942, when the Terminal Chamber of Commerce published its industrial prospectus, the community has negotiated for a new industry large enough to provide a substantial work opportunity. But, as one of the development committee's advertisements stated: "Talk in the past 30 years has accomplished little." Successive interested organizations considered and discarded Terminal as a factory site.
Finally, in early 1952, the Chamber of Commerce was approached by a toy manufacturing company which proposed to build a $225,000 assembly plant. The company was considering five towns, and required water, gas, electricity, and sewer commitments, plus a railroad siding and a $100,000 building loan, as assurances from the village. Ready for action, the Chamber of Commerce offered the necessary funds and set about raising the money through a citizens committee.

The "ten basic facts" presented by the Citizens Committee to the community as arguments for the stock company were these:

1. Terminal has not had a new industry employing more than ten persons in 34 years.
2. Over 400 citizens must go out of town to work.
3. New industries in the community mean greater payrolls here, and industries need the help of the community to relocate.
4. A greater tax duplicate which would result from a new industry would mean greater services to all citizens.
5. Improved and modern methods being developed in the local rubber goods factory and railroad can mean fewer jobs for Terminal citizens.
6. More job opportunities must be made available in Terminal or the community will go backward.
7. Diversified industry in Terminal is the only answer to keep Terminal from becoming a "ghost town" should an over-all business decline occur.
8. More payrolls mean expanded stores and services which would mean fewer people would go out of town to shop.
9. Home and property values of every citizen would be maintained at a high level or increased with the addition of a new industry.
10. A large percentage of our young people graduating from school must go elsewhere to seek opportunities.
Of these ten points, four definitely relate to the railroad-influenced threat of further-decreased local employment opportunities. The stock in the development corporation was offered for sale at $50 a share, with a maximum set upon individual purchases of ten percent of the total shares. The campaign was concluded September 25, 1952, with approximately $90,000 available. By mid-October, with stock still being sold, this had increased to $94,000.

In July the city council took action to provide a new sewer to serve the plant, at an estimated cost of approximately $11,000. Gas was made available on a development committee guarantee of the installation cost of $7,500. Contracts were approved for the railroad siding.

Finally, in August, contracts were signed committing the factory definitely to locate in Terminal. The building loan was made available on 45 days notice, provided the building must first be half constructed and paid for. It was expected that the plant would be in operation by the first quarter of 1953. The building contract was awarded to a Terminal contractor.

Here, then, was an entire community dependent in the past upon the railroad for its existence. It is only one of hundreds of such communities and is not, perhaps, in all senses typical. It does provide a laboratory for the testing of the major variables of identification and attitudes toward the diesel as a comparison with the earlier sample.
If the scales have any validity, here should be found pro-
nounced statistical relationships, which should be more 
meaningful viewed against the background of Terminal's 
history and its efforts to survive what could well be, 
for its existence, a disastrous technological change.
CHAPTER V

SELECTION AND ANALYSIS OF THE TERMINAL SAMPLE

The selection of a sample for the Terminal study was made from two employment rosters provided by the local chairman of the Brotherhood of Railroad Trainmen. As in the case of the large-city sample, criteria for the selection of the sample stipulated that respondents (1) be workers employed as road trainmen, (2) live within or near Terminal, (3) not be railroad officials or supervisory employees.

In conformity with these rules, a total of 79 names were selected. Addresses were obtained for all these individuals from the telephone directory and from the local chairman where no telephone listing was available.

The complete questionnaire, together with a letter of introduction directed toward this particular group of workers, and the multilithed letter from the president of the grand lodge of the Brotherhood of Railroad Trainmen, was sent to the 79 respondents.¹ Seventeen trainmen returned completed questionnaires within a few days. A follow-up postal card was mailed two weeks later, producing an additional nine returns. Some weeks later, an attempt was made to reach all non-returnees by telephone.² Thirty-four of the 53 non-returnees were reached in this manner. Ten telephones either did not an-

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¹See Appendix B for the letter directed to this group.
²This final follow-up might have been more effective had it been done sooner. Hospitalization of the researcher prevented this.
swer or responded with a busy signal consistently during the two-day telephone follow-up. Nine non-returnees did not have telephones. As a result of this check, five returns were received, making a total of 31 completed questionnaires, or 40 percent of those mailed. Two questionnaires were incompletely filled out. One more was eliminated because the respondent had a neighbor fill it out. There were thus 28 questionnaires for analysis.

Table 5. The Relationships Between Identification, Diesel Attitudes, Job Satisfaction, and Selected Biographical Data of 28 Railroad Trainmen as Shown by Product Moment Correlation Coefficients.

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>Age</th>
<th>Seniority</th>
<th>Job Satisfaction</th>
<th>Diesel Identification</th>
<th>Attitude to Diesel</th>
<th>Years of School</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Seniority</td>
<td>.830*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Job satisfaction</td>
<td>.497*</td>
<td>.508*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Identification</td>
<td>.358</td>
<td>.321</td>
<td>.668*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Attitude to diesel</td>
<td>.569#</td>
<td>.146</td>
<td>.394#</td>
<td>-.357</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Years of school</td>
<td>-.657*</td>
<td>-.649*</td>
<td>-.513*</td>
<td>-.485*</td>
<td>.139</td>
<td></td>
</tr>
</tbody>
</table>

MEAN

<table>
<thead>
<tr>
<th>Age</th>
<th>Seniority</th>
<th>Job Satisfaction</th>
<th>Diesel Identification</th>
<th>Attitude to Diesel</th>
<th>Years of School</th>
</tr>
</thead>
<tbody>
<tr>
<td>51.</td>
<td>14.5</td>
<td>24.0</td>
<td>40.7</td>
<td>88.7</td>
<td>9.1</td>
</tr>
</tbody>
</table>

STANDARD DEVIATION

<table>
<thead>
<tr>
<th>Age</th>
<th>Seniority</th>
<th>Job Satisfaction</th>
<th>Diesel Identification</th>
<th>Attitude to Diesel</th>
<th>Years of School</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.</td>
<td>8.1</td>
<td>7.4</td>
<td>11.2</td>
<td>17.1</td>
<td>5.3</td>
</tr>
</tbody>
</table>

*Significant at the .01 level of confidence
#Significant at the .05 level of confidence

In view of the busy signal's persistence, some inquiries were made. Both the local BRT chairman and the telephone operator asserted that railroaders just "in" from a run remove their receivers from the cradle to guarantee sleep. Vacations may have accounted for other failures to answer.
Table 5 contains the data from the Terminal sample as expressed by product moment correlations. The obvious and expected high correlations between age and seniority (.330) and between age and years of school (-.657) do not require discussion. Table 5 also shows a significant correlation between age and job satisfaction (.497), thus substantiating the high but not statistically significant correlation between these variables seen in the large-city sample.

In the Terminal sample, there is a significant correlation between an unfavorable attitude toward diesel and age. This may be the result of increased rigidity of personality with advancing age, or it may be a function of lack of general information about the diesel. Anastasi and Foley have observed a decline of general information in individuals past the age of 50.  

Within the particular railroad population under examination, the researcher would tend to associate the negative attitude toward the diesel among older workers with a reluctance to see the passing of the steam engine, so long the embodiment of risk and unpredictability of the "Casey Jones" era in railroading. A second influencing factor may be the threat posed by dieselization to the existence of the community of Terminal, which may act to promote an unfavorable attitude toward this particular technological change.

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The relationship between age and identification (.358) is not quite at the five percent level of significance. However, in view of the fact that such a relationship was found to be significant in the large-city sample, it cannot here be dismissed summarily as a chance occurrence.

The relationships obtained in the Terminal sample between the variable of seniority and (a) job satisfaction (.508); (b) identification (.321); and (c) years of school (.649) are expectedly similar to those found between these variables and age. However, it may be noted that the correlation between attitude toward the diesel and seniority (-.146) is not a significant one, though in the direction to be expected from that existing between age and diesel attitude.

Table 5 also indicates that the man who is now satisfied with his job is also highly identified (.668); has a favorable attitude toward the diesel engine (.394); and has less schooling (-.513) than the unsatisfied worker.

Identification and years of school are negatively associated (-.485), as they were in the large-city sample. This may be explained, perhaps, in terms of the non-rational elements contained in the identification scale which are in turn related to lack of formal schooling. The correlation between identification and a negative attitude toward diesel power falls just outside the five percent level of signifi-

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5 The term "non-rational" is used here to denote matters of belief not necessarily based on knowledge objectively arrived at.
cance. When job satisfaction was held constant, this same relationship was found previously in the large-city sample of railroad trainmen. In view of this finding, there may be some validity to the following generalization:

Identification with railroading implies adherence to the values of and attitudes toward railroading which have been an outgrowth of the occupation's long and colorful history. Insofar as the diesel portends change in the occupation, railroaders will be reluctant to endorse the new type of power, even though they can look forward to improved working conditions. In the new technology they see a threat to the value-attitude complex which grew up during the steam locomotive era. The attitudes of the more highly-identified older men are here a crucial factor.

Further significant relationships, expressed by point biserial correlations, are tabulated in Table 6. Trainmen who have read the most widely about diesel power tend not to be those who are highly identified (-.54). Workers who have been longest on the railroad, holding the highest seniority ratings, are the most satisfied with their jobs. The favorable attitude toward the diesel, associated with the degree of diesel experience of the worker (.60), substantiates the findings of the large-city sample.
The rewarding aspect of the Terminal sample analysis appears to be its almost uniform substantiation, at a higher level of significance, of the relationships indicated in the large-city sample. To answer the question of why the correlations found in the Terminal sample should be consistently higher than those of the city sample, certain speculations may be made. Based on the total experience of both the pilot study of 1949 and the present research, three may be stated.

1. One might hypothesize that a resistance to change is more pronounced at the onset of technological change, and that this attitude tends to decline, as reflected in this

Table 6. The Relationships Between Identification, Diesel Attitude, Job Satisfaction, and Selected Biographical Data of 28 Railroad Trainmen as Shown by Point Biserial Correlation Coefficients

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>Identification</th>
<th>Diesel Attitude</th>
<th>Job Satisfaction</th>
<th>Years of School</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Seniority</td>
<td>.25</td>
<td>.13</td>
<td>.42</td>
<td>.20</td>
</tr>
<tr>
<td>2. Diesel Experience</td>
<td>.26</td>
<td>.60*</td>
<td>.26</td>
<td>.03</td>
</tr>
<tr>
<td>3. Diesel Reading</td>
<td>-.54*</td>
<td>-.01</td>
<td>-.11</td>
<td>.08</td>
</tr>
<tr>
<td>4. Years on Railroad</td>
<td>.16</td>
<td>.28</td>
<td>.38#</td>
<td>.17</td>
</tr>
</tbody>
</table>

MEAN: 40.7 88.7 24.0 9.0
STANDARD DEVIATION: 11.2 17.1 7.4 5.3

*Significant at the .01 level of confidence
#Significant at the .05 level of confidence
study's findings in the two samples concerning attitude toward the diesel engine, job satisfaction, identification, age, and their interrelations.

Dieselization is more substantially accomplished on the railroad from which the large-city sample was drawn. This particular railroad had reached in 1949 approximately the same degree of replacement of steam by diesel power as the Terminal railroad carrier had accomplished by mid-1952. At this writing, dieselization is an accepted fact on the large-city railroad, and has been for two years. On the other hand, the railroad running through Terminal is what is known as a "coal-hauling" road, a segment of the rail industry which as late as 1950 was not expected by the average railroader to turn to diesel power for its freight runs because of the possible resulting loss of patronage by coal shippers who were these roads' main source of revenue.

2. While technological change is a threat to the individual workers' material and psychological security in both the large city and the "railroad town", one might speculate that it is an additional threat in a workers' community such as that in the Terminal sample. Railroaders are home-owners to a degree not usually found among hourly-rated workers, and a threat to Terminal's existence becomes a substantial financial consideration to each resident.6

3. Technological change is much more readily seen as a threat to railroading as a way of life by older workers than by the younger men. The Terminal sample contained twice as many "old heads" (men hired before 1927) as "young heads" (men hired since 1937). The age level of Terminal workers is reflected in a certain rigidity of attitude. In contrast, the young men who comprised 65 percent of the large-city sample, were less susceptible to definitive attitude orientations.

From the results of the statistical analysis, it appears that the scales have some validity. Every relationship examined in both samples is in the direction one would expect, from the standpoint of the original hypotheses. Without exception these hypotheses were borne out, and the relationships indicated in the first sample were substantiated in the second.

7 There was no hiring on the railroads between 1927 and 1937 because of economic conditions.
CHAPTER VI
SUMMARY AND CONCLUSIONS

This study of technological change and the reactions of railroad workers to the particular technology of diesel power has proceeded along two lines: (1) The development of scales designed to measure the two factors defined as identification with railroading and attitude toward the diesel; and (2) the application of these instruments to a working population undergoing the technological change from steam to diesel power.

Scale Construction

The Identification Scale. The variable of identification can in the most objective sense be defined as what the identification scale measures. In terms of the content of the items that correlate most highly with the total identification score, this scale can be said to measure "the degree to which an individual railroad worker's attitudes and values reflect acceptance of his occupational grouping as one which has a particularly important place in society, as one which demands special skills and responsibilities, and as one which also demands a special loyalty of its members to each other and to the group's shared values and beliefs."\(^1\)

Verbatim statements derived from interviews with railroaders in the earlier pilot study became items of a pre-test.

\(^1\)See Chapter II, p. 11.
scale submitted to a small sample of railroad workers. This scale was found to yield a split-half reliability estimated at .91. Twenty-five items remained after applying the criterion of selecting only those items which provided the maximum dispersion of response.

The Diesel Attitude Scale. The items in the diesel attitude scale were selected from verbatim statements of railroad workers in the pre-test sample who had been asked to list both favorable and unfavorable facts and beliefs about the diesel engine versus the steam engine. Forty items were judged to have sufficient dispersion of response to be included in the final scale. The reliability of the diesel attitude scale for the pre-test sample was .87.

Final Scale Analysis of the Large City Sample

Both the diesel attitude scale and the identification scale were placed in a format which provided a four-point response pattern ranging from true to false with alternative responses of mostly true and mostly false. They were assembled, together with a previously-validated job-satisfaction scale and selected biographical questions.

The scales were mailed, together with appropriate credentials, to 173 railroad trainmen of a large midwestern railroad. The members of the sample worked on a single division of the railroad and lived in the two large cities located at either end of the particular division.
Machine analysis of the 91 usable questionnaires returned showed that the identification scale had a split-half reliability of .76 after application of the Spearman-Brown formula. The diesel-attitude scale was found to have a split-half reliability of .91 after applying the Spearman-Brown formula.

Validity of the identification scale might be inferred from its logical positive relationships with age, seniority, and job satisfaction and its expected negative correlation with education, as expressed by product moment correlations. The only significant relationships between attitude toward the diesel and other variables are those which indicate that favorable attitude toward the diesel is associated with years of school and diesel experience. These relationships, as arguments for the validity of the diesel-attitude scale, are inconclusive.

Finally, in the large-city sample, a partial correlation between identification and attitude toward the diesel, with job satisfaction held constant, shows that the more identified the worker is, the more unfavorable his attitude toward diesel power. This substantiates in part the intriguing hypothesis with which this study began.

The Use of the Scales in a Case Study of a Community

The small railroad community of Terminal was selected for special study because of its complete dependence on the
railroad economy. The questionnaires were mailed to 79 railroad trainmen living in the community after a rather intensive investigation of the railroad-community relations. Against a background of information about the community and the threat presented to its economy by the adoption of diesel power, statistical relationships discovered take on added significance.

Adequate reasons for believing that the identification and diesel-attitude scales have some validity are found in the substantiation of the relations indicated in the large-city sample. In addition, correlations found in the Terminal analysis are generally higher. Again, the relationship found between experience with diesel and a favorable attitude toward it offers a rewarding insight into this complex problem, as does the negative relationship between identification and favorable attitude toward the diesel engine.

Conclusion

Development of the scales and the use of mailed questionnaires were possible only because of the large amount of time given to building rapport between the researcher, on the one hand, and the respondents and the organizations with which they were affiliated, on the other. The statistical analyses, even with the aid of the most modern equipment, were complicated by the extremely complex interrelationships of the major variables.
The more significant findings of this study might be listed as follows:

1. Favorable or unfavorable attitudes toward this particular technological change are conditioned by:
   (a) The degree to which the railroad worker is identified with railroading as measured by the identification scale,
   (b) The age of the worker, and
   (c) The amount of experience he has had with the diesel engine and the amount of reading he has done on the subject, plus (in the large-city sample) the number of years of schooling.

2. Identification is not only a factor in acceptance of the diesel engine but is also a substantial factor in job satisfaction among railroad trainmen. Identification is in turn related to age, seniority, and the education of the worker.
Appendix A

Credentials
July 3, 1951

TO WHOM IT MAY CONCERN:

This will introduce Mr. Charles M. Westie, who holds a research training fellowship of the Social Science Research Council from July, 1951, to July, 1952, for a study of reactions of railroad workers to technological change.

Any courtesies which you may extend to Mr. Westie will be gratefully appreciated by the Council.

Joseph B. Casagrande
To Members of the Brotherhood of Railroad Trainmen.

Dear Sirs and Brothers:

Mr. Charles Westie of Ohio State University has requested the Brotherhood's cooperation in a study of the effects of technology on the lives of railroad workers.

Mr. Westie is recommended by the Sociology Department of the University and by the Social Science Research Council as a conscientious researcher who will treat your individual answers to his questions respectfully and confidentially.

Although your cooperation is of course a voluntary decision on your part, I feel this is a worthwhile study and worthy of our fullest cooperation.

Sincerely and fraternally yours,

W. P. Kennedy
President

July 11, 1951.
To Whom It May Concern:

Mr. Charles M. Westie is an advanced graduate student in the Department of Sociology of the Ohio State University. He has taught introductory and educational sociology in this department for the past two years, and was previously employed as a research assistant by the Personnel Research Board of the University.

Mr. Westie has completed a study of railroad workers in ______ under my direction, and is now extending his research to other localities. His competence in his work has been recognized by the Social Science Research Council, which is currently giving him financial aid in continuing his study of railroaders.

In our professional and personal relations I have found Mr. Westie to be a qualified researcher who will regard your cooperation with the greatest respect and professional integrity. Your help will be in the interest of advancing the science of human relations.

Sincerely yours,

R. F. Sletto
Chairman, Department of Sociology
The Ohio State University
Appendix B

Letters to Respondents
Dear Mr. __________:

Two years ago I had the pleasure of talking to you in your home about your job on the railroad. Thanks to the cooperation of you men, I have been given a chance to study railroading further, with the help of a research training fellowship from the Social Science Research Council. I will now be able to study the attitudes of men on other railroads, as well as many more men on your own road.

In order to do this, I would like your opinions on certain questions where there has been some disagreement. Will you please take about 20 minutes when you are "in" to fill out this questionnaire according to the directions? I know I have already asked a great deal of you, and I am grateful to you for your past generous response. I hope I can repay you in some small way by bringing to the attention of many more people the accomplishments and problems of men in your unique occupation.

Please return the completed questionnaire to me in the enclosed, self-addressed envelope.

Sincerely yours,

Charles M. Westie
Dear Sir:

As a railroader, will you do me the favor of spending fifteen minutes of your time to fill in a questionnaire? Your name has been given to me by Mr. ______, your local chairman, as a representative railroad trainman.

I am a student at the Ohio State University under the "G.I. Bill of Rights". The information I get from railroaders will be a part of the work for my Doctor of Philosophy degree. Your answers may tell us something important about how men like their occupations and how the change from steam to diesel power on the railroads affects them.

Enclosed with the questionnaire is a letter from your Brotherhood president, who has approved of this study. However, this is an independent job I am doing as a part of my education, and it is not sponsored by any group.

If you would like to know more about me, I am the son of a steamfitter, and grew up in Dearborn, Michigan. I went to a state teachers college in Michigan, and have worked as a tool and die apprentice for the Ford Motor Company. I spent three years in the Army and was wounded in the Normandy invasion. I am married and have three children. My government pension and the G.I. Bill have allowed me to take advanced training at Ohio State. This study of railroaders will be the final step toward my advanced degree and my goal of college teaching.

This study of railroaders is an important one because it can be used in the future to help more people understand the railroad workers better. I have spent more than two years and a lot of money doing this job. To finish it, it is important that these questionnaires be returned to me at the earliest time possible. Other railroaders have been very cooperative and understanding about this study, and I hope that will recommend it to you.

If you have any question about me or my study, you can contact Mr. ______, who says he will be glad to clear it up.

Thank you very much for your help.

Very truly yours,

Charles M. Westie
P.S. If you return the questionnaire only, without my letters, postage on the return envelope will be sufficient. Thanks again for your time.

C.M.W.

P.S. Since Mr. ______ is the chairman for you men in ______, I have written to him to explain my work quite fully. If you return the completed questionnaire only, without my letters, postage on the return envelope will be sufficient.

C.M.W.
Dear Friend:

Some time ago I sent a questionnaire to a group of you members of the Brotherhood of Railroad Trainmen. More than half of you have filled out and returned this questionnaire to me, and I want to thank you very much.

It was a pleasure to have so many of you ask me to send you a copy of the results of the study when it is completed. I shall be very happy to do this.

Some of you have not been able to find the time to finish this yet. I had intended to come to call on as many of you as I could. However, I have had a misfortune with my amputated leg, and must have a re-amputation within the next month. As a result, it would be impossible for me to get around to all of you on crutches.

I would, therefore, like to make this special appeal to you if you haven't filled out and returned the questionnaire. If it is a matter of the time to do it, perhaps you could manage it the next time you are "in". If the reason you have not sent it is that you need more information about the study, could you please send me your questions in the envelope I enclosed for the return of the questionnaire? I would be glad to write to any one of you individually to tell you more about what I am trying to do.

I hope that as many more of you as possible will find the 15 or 20 minutes needed to do this little chore for me. The more the public knows and appreciates the advantages and disadvantages of your unique occupation, the better it will be for the interests of the railroader.

Again, to those of you who have returned my questionnaire, many thanks. It is this type of interest and response that has made so many railroaders my fast friends, and almost made a regular "rail" out of this school teacher.

Sincerely yours,

Charles M. Westie
Dear Friend:

Because I am interested in railroading, I have visited your town many times in the past year. I have been a graduate student and teacher at the Ohio State University for the past five years. During this time I have been studying railroad workers and the way they feel about their jobs and the present trend toward diesel engines.

Your brotherhood officials and the officials of the railroad know what I am doing and the reasons for doing it. They have all been most cooperative and considerate. Because this study will be my thesis when it is written up and all the opinions compiled, it is the most important research I have yet undertaken. It could not be done without the help of men like yourself.

I had planned on talking to each one of you at home, so that I could answer all the questions you might have about me and my study. However, this last month I have had to have my leg reamputated because of an infection. I am now convalescing on a farm in Michigan and I have decided to write you this letter, enclosing a questionnaire which I hope you will fill out for me. Please answer the questions about yourself on the last page, and the separate questionnaire about ____.

Because I am asking questions about you, I feel I should tell you something about myself. I am the son of a steamfitter, and grew up in Dearborn, Michigan. I went to a state teachers college in Michigan, and have worked as a tool and die apprentice for the Ford Motor Company. I spent three years in the Army, and was wounded in the Normandy invasion. I am married and have three children. Now that my "G.I. Bill" training is almost completed, my study of railroaders will be the final step toward obtaining my doctor's degree and reaching my goal of college teaching.

To finish this job, it is most important that these questionnaires be returned to me as soon as possible. Other railroaders in ____ and ____ have been very cooperative and understanding about this study. If you have any questions about me or my study, you can contact Mr. _____ or Mr. ____ who have said they would recommend me.

I am sorry that I have had to do this by mail and miss meeting you personally. I will be in ____ a few times this summer, and perhaps I will have a chance to meet some of you.

Sincerely yours,

Charles M. Westie
Dear Friend,

Recently I sent you a letter and a questionnaire which I asked you to fill out in the interest of a scientific study. In spite of my being a stranger asking a lot of a busy man, I have been very pleased to have a number of these returned by you men in ___.

If you have already sent yours back, please forgive this reminder. If not, could you tackle it the next time you are in?

Thank you again, very much.

Sincerely,

Charles M. Westie
Dear Mr. _____:

Thank you for giving me your comments on the questionnaire you returned to me. You may be assured that I will send you a copy of the results of the study as soon as it is completed. I am sure the findings of this study can be of real value in helping people to understand the problems and satisfactions of being a railroader.

Perhaps I will meet you sometime in ____. If not, I wish you and your fellow-workers a long continuation of the service you have afforded the American public.

Sincerely yours,

Charles M. Westie
Appendix C

Item Analysis
APPENDIX G

ITEM ANALYSIS OF IDENTIFICATION AND DIESEL ATTITUDE SCALES

**Identification Scale**

<table>
<thead>
<tr>
<th>ITEM</th>
<th>Distribution of Responses of 91 Railroad Trainmen</th>
<th>True</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>r&lt;sub&gt;t&lt;/sub&gt;*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. A railroader is any man who works for the railroad.</td>
<td>27 1 9 54</td>
<td>.13</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Railroaders stick together.</td>
<td>39 38 6 8</td>
<td>.64</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Only men who work in operating service are real railroaders.</td>
<td>28 11 10 40</td>
<td>.62</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. I am proud to be a railroader.</td>
<td>60 25 2 4</td>
<td>.88</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Railroading takes a lot of nerve.</td>
<td>32 24 12 23</td>
<td>.60</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Railroaders are a good bunch of fellows to work with.</td>
<td>57 31 0 3</td>
<td>.68</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. I always wanted to be a railroader.</td>
<td>45 10 5 30</td>
<td>.80</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Railroaders are well respected in their neighborhood.</td>
<td>36 43 6 4</td>
<td>.65</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. There is something fascinating about railroading.</td>
<td>81 8 0 2 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. The best thing about railroading is the money in it.</td>
<td>28 10 31 22</td>
<td>.22</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Even when they gripe, railroaders don't mean it.</td>
<td>44 31 8 8</td>
<td>.50</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. A railroader's job is to serve the public.</td>
<td>83 5 0 3</td>
<td>.60</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Tetrachoric correlations showing the relationship between individual items and total scale scores.*
A railroader's credit is always good.
Railroading is just a laboring job.
There's something more to railroading than just payday.
A railroader will always go back to railroading.
Railroading is a high-class job.
A railroader is pretty independent.
Railroaders think their job is "tops".
Once a railroader, always a railroader.
You can work your way up on the railroad.
Railroaders go back to railroading because they don't know anything else.
Railroading is just a job.
You always get fair treatment on the railroad.
Railroading is easy work.

<table>
<thead>
<tr>
<th>ITEM</th>
<th>True</th>
<th>False</th>
</tr>
</thead>
<tbody>
<tr>
<td>13.</td>
<td>24</td>
<td>8</td>
</tr>
<tr>
<td>14.</td>
<td>48</td>
<td>17</td>
</tr>
<tr>
<td>15.</td>
<td>68</td>
<td>19</td>
</tr>
<tr>
<td>16.</td>
<td>22</td>
<td>52</td>
</tr>
<tr>
<td>17.</td>
<td>22</td>
<td>25</td>
</tr>
<tr>
<td>18.</td>
<td>35</td>
<td>33</td>
</tr>
<tr>
<td>19.</td>
<td>28</td>
<td>39</td>
</tr>
<tr>
<td>20.</td>
<td>27</td>
<td>48</td>
</tr>
<tr>
<td>21.</td>
<td>49</td>
<td>24</td>
</tr>
<tr>
<td>22.</td>
<td>35</td>
<td>21</td>
</tr>
<tr>
<td>23.</td>
<td>35</td>
<td>23</td>
</tr>
<tr>
<td>24.</td>
<td>38</td>
<td>35</td>
</tr>
<tr>
<td>25.</td>
<td>35</td>
<td>19</td>
</tr>
</tbody>
</table>

-76-
### Diesel Attitude Scale

**ITEM** | **Distribution of Responses of 91 Railroad Trainmen** | **r** <br>**False** - - - **True** <br>1 | 2 | 3 | 4 <br>1. The diesel just won't hold up like the steam engine. | 12 | 15 | 18 | 46 | .60 <br>2. Diesels are cheaper to operate than steam engines. | 6 | 7 | 16 | 61 | .50 <br>3. A lot of diesels catch on fire. | 9 | 27 | 43 | .46 <br>4. Maintenance on diesels will eventually be higher than steam. | 18 | 20 | 19 | 33 | .67 <br>5. You can't see signals out of a diesel. | 2 | 2 | 10 | 76 | .33 <br>6. No true railroader would want a diesel engine. | 4 | 4 | 13 | 70 | .78 <br>7. Steam engines will always move where diesels sometimes won't. | 13 | 5 | 19 | 53 | .75 <br>8. Diesel engines save a lot of work for the railroader. | 14 | 5 | 22 | 50 | .69 <br>9. You can't switch as fast with diesels. | 18 | 9 | 12 | 51 | .44 <br>10. Steam and railroading go together like ham and eggs. | 20 | 13 | 22 | 36 | .54 <br>11. Coal hauling roads will never switch to diesel. | 3 | 10 | 26 | 52 | .37 <br>12. It's hard to judge the speed of a diesel. | 39 | 17 | 4 | 31 | .06 <br>13. The diesel seems like a streetcar. | 28 | 17 | 12 | 33 | .46 <br>14. The diesel horn is loud and unpleasant to people. | 17 | 26 | 15 | 32 | .34 <br>15. Diesels are too new to tell much about them. | 10 | 22 | 16 | 43 | .78
<table>
<thead>
<tr>
<th>ITEM</th>
<th>False</th>
<th>--</th>
<th>True</th>
<th>$r_t$</th>
</tr>
</thead>
<tbody>
<tr>
<td>16. Diesels are easier to work with.</td>
<td>5</td>
<td>8</td>
<td>11</td>
<td>65</td>
</tr>
<tr>
<td>17. We should save steam in case of a national emergency.</td>
<td>42</td>
<td>25</td>
<td>6</td>
<td>18</td>
</tr>
<tr>
<td>18. Railroads are taking a big financial risk with diesels.</td>
<td>8</td>
<td>6</td>
<td>26</td>
<td>51</td>
</tr>
<tr>
<td>19. Diesels are quieter than steam engines.</td>
<td>14</td>
<td>7</td>
<td>16</td>
<td>53</td>
</tr>
<tr>
<td>20. The diesel is an advantage for the workers.</td>
<td>14</td>
<td>7</td>
<td>17</td>
<td>53</td>
</tr>
<tr>
<td>21. Keeping a lot of men working is more important than saving money with diesels.</td>
<td>26</td>
<td>19</td>
<td>20</td>
<td>24</td>
</tr>
<tr>
<td>22. Some railroads have found the diesel a disadvantage with heavy tonnage.</td>
<td>12</td>
<td>12</td>
<td>25</td>
<td>42</td>
</tr>
<tr>
<td>23. Diesel power will mean more regular hours for the worker.</td>
<td>28</td>
<td>12</td>
<td>25</td>
<td>26</td>
</tr>
<tr>
<td>24. Diesels break down easily.</td>
<td>15</td>
<td>12</td>
<td>29</td>
<td>35</td>
</tr>
<tr>
<td>25. Diesel fumes are more harmful than coal smoke.</td>
<td>32</td>
<td>21</td>
<td>19</td>
<td>18</td>
</tr>
<tr>
<td>26. Railroads have hurt themselves by loss of coal revenue with diesels.</td>
<td>10</td>
<td>15</td>
<td>30</td>
<td>36</td>
</tr>
<tr>
<td>27. You have to have diesels to keep the public satisfied.</td>
<td>13</td>
<td>32</td>
<td>13</td>
<td>28</td>
</tr>
<tr>
<td>28. You just can't beat a diesel engine.</td>
<td>7</td>
<td>18</td>
<td>35</td>
<td>30</td>
</tr>
<tr>
<td>29. A steam engine often has to help a diesel.</td>
<td>40</td>
<td>20</td>
<td>16</td>
<td>14</td>
</tr>
<tr>
<td>30. You feel more secure when you are riding a diesel train.</td>
<td>18</td>
<td>14</td>
<td>23</td>
<td>34</td>
</tr>
<tr>
<td>31. There is a higher maintenance cost on diesels.</td>
<td>11</td>
<td>21</td>
<td>32</td>
<td>26</td>
</tr>
<tr>
<td>ITEM</td>
<td>Statement</td>
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<td>3</td>
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<tr>
<td>------</td>
<td>---------------------------------------------------------------------------</td>
<td>-------</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>32.</td>
<td>Engine crews will live longer with diesel.</td>
<td>6</td>
<td>18</td>
<td>33</td>
</tr>
<tr>
<td>33.</td>
<td>Everybody benefits from the diesel.</td>
<td>22</td>
<td>20</td>
<td>29</td>
</tr>
<tr>
<td>34.</td>
<td>The diesel cuts off too many jobs.</td>
<td>27</td>
<td>32</td>
<td>18</td>
</tr>
<tr>
<td>35.</td>
<td>The steam engines beat a brakeman to death.</td>
<td>11</td>
<td>16</td>
<td>21</td>
</tr>
<tr>
<td>36.</td>
<td>The diesels are healthier for the workman.</td>
<td>9</td>
<td>12</td>
<td>28</td>
</tr>
<tr>
<td>37.</td>
<td>It's hard for a trainman to get off and on a diesel.</td>
<td>38</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>38.</td>
<td>Diesels burn up too fast.</td>
<td>8</td>
<td>12</td>
<td>33</td>
</tr>
<tr>
<td>39.</td>
<td>Diesels are going to create a lot of new jobs.</td>
<td>29</td>
<td>26</td>
<td>27</td>
</tr>
<tr>
<td>40.</td>
<td>Fuel oil might run out so it's best to keep steam engines.</td>
<td>9</td>
<td>17</td>
<td>35</td>
</tr>
</tbody>
</table>
Appendix D

Pre-Test Questionnaire
Here are some statements about diesel and steam locomotive power. These statements have been made to me by railroaders like yourself at various times. I would like you to read each statement and circle "Y" if you agree with the statement; or to circle "N" if you do not agree. There are no right answers because it is your opinion that counts.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The diesel just won't hold up like the steam engine</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>2. Diesel's are cheaper to operate than steam engines</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>3. A lot of diesels catch on fire</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>4. It would be best for everybody to quit using diesel</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>5. Maintenance on diesel will eventually be higher than steam</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>6. Diesels are making more profit for the railroads</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>7. There are a lot of places where diesels can't haul</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>8. Diesel fumes kill hogs and cattle</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>9. You can't see signals out of a diesel</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>10. The diesels are an advantage for the railroad operators</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>11. You have a lot more breakage of freight with diesels</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>12. No true railroader would want a diesel engine</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>13. Steam engines will always move where diesels sometimes won't</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>14. Diesels add to the efficiency of service</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>15. Diesel engines save a lot of work for the railroader</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>16. When you take steam away altogether, railroading is on the way out</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>17. You can't switch as fast with diesels</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>18. The diesel is an advantage for the public</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>19. You have a lot more wrecks at crossings with diesel</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>20. Steam and railroading go together like ham and eggs</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>21. Coal hauling roads will never switch to diesel</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>22. Diesels are a lot easier riding than steam engines</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>23. It's hard to judge the speed of a diesel</td>
<td>N</td>
<td>Y</td>
</tr>
</tbody>
</table>
24. The diesel seems like a streetcar..........................Y N
25. Diesels are more dangerous than steam engines..............Y N
26. You can make a schedule easier with diesels....................Y N
27. Diesels are a lot more comfortable for the workers..............Y N
28. The diesel horn is loud and unpleasant to people...............Y N
29. Diesels are too new to tell much about them........................Y N
30. Diesels are easier to work with...................................Y N
31. Steam engines start a lot of field fires..........................Y N
32. We should save steam in case of a national emergency...........Y N
33. Railroads are taking a big financial risk with diesels............Y N
34. Diesels are quieter than steam engines............................Y N
35. You save delay in moving freight with diesels........................Y N
36. You have to have diesels to keep up with progress...............Y N
37. Diesels make a lot more noise than steam engines................Y N
38. It is the goal of the operators to get diesels as fast as they can.Y N
39. The diesel is an advantage for the worker..........................Y N
40. Keeping a lot of men working is more important than saving money with diesels..........................................................Y N
41. Some railroads have found the diesel a disadvantage with heavy tonnage.................................................................Y N
42. Diesel power will mean more regular hours for the worker......Y N
43. Diesels are a lot easier on the track than steam engines........Y N
44. I personally like the steam engine best................................Y N
45. Diesels break down easily.............................................Y N
46. You get a better view of the crossings with diesel................Y N
47. Diesels are breaking too many draw bars............................Y N
48. They should scrap all steam and get all diesels..................Y N
49. Diesel fumes are more harmful than coal smoke...................Y N
50. There is a longer layover time in the yards with diesel...........Y N
51. You have lower braking power with diesels..........................Y N
52. Smoke elimination with diesel is well worth the cost........... Y N
53. Railroads have hurt themselves by loss of coal revenue with diesels.Y N
54. You have to have diesels to keep the public satisfied............ Y N
55. A steam engine is better in the winter time.................... Y N
56. You just can't beat a diesel engine............................. Y N
57. The diesels might bankrupt the railroads........................ Y N
58. Diesels are going to speed up the country...................... Y N
59. A steam engine often has to help a diesel........................ Y N
60. You feel more secure when you are riding a diesel train........ Y N
61. There is a higher maintenance cost on diesels.................. Y N
62. Engine crews will live longer with diesel........................ Y N
63. Everybody benefits from the diesel................................ Y N
64. Diesel only benefits the passengers......................... Y N
65. The diesel cuts off too many jobs............................... Y N
66. The "J's" boat a brakeman to death.............................. Y N
67. A good steam engine will outpull a diesel...................... Y N
68. The diesels are healthier for the workman..................... Y N
69. It's hard for a trainman to get off and on a diesel........... Y N
70. Diesels burn up too fast........................................ Y N
71. Diesels are going to create a lot of new jobs................ Y N
72. Diesels move freight faster....................................... Y N
73. Diesels save the railroad a lot of money....................... Y N
74. Fuel oil might run out so it's best to keep steam engines..... Y N

Now I would like you to read some statements about railroaders and railroading as a job. I would like to have you circle "Y" if you agree with the statement and "N" (no) if you do not agree with the statement.

1. A railroader is any man that works for the railroad.............. Y N
2. Railroaders are proud of their job................................ Y N
3. Railroaders like the irregular hours.............................. Y N
4. Railroaders stick together. .................................. Y  N
5. There's a lot of security in railroading. ......................... Y  N
6. Only men who work in operating service are real railroaders. .... Y  N
7. I am proud to be a railroader. ................................... Y  N
8. Railroading takes a lot of nerve. ................................ Y  N
9. Railroaders are a good bunch of fellows to work with. ............. Y  N
10. I always wanted to be a railroader. ................................ Y  N
11. There's always something different on the railroad. ................ Y  N
12. Railroaders are well respected in their neighborhood. ............. Y  N
13. Young heads don't really appreciate railroading. ................... Y  N
14. There is something fascinating about railroading. .................. Y  N
15. The best thing about railroading is the money in it. ............... Y  N
16. Even when they gripe, railroaders don't mean it. ................... Y  N
17. Railroading is a dangerous job. .................................. Y  N
18. A railroader's job is to serve the public. ........................ Y  N
19. A railroader's credit is always good. ............................... Y  N
20. Railroading is just a laboring job. ................................ Y  N
21. Railroaders are good citizens. ..................................... Y  N
22. There's something more to railroading than just payday............. Y  N
23. A railroader is a man that has worked for the railroad for a long time. ................... Y  N
24. Railroading is one of the most important jobs in the country....... Y  N
25. A railroader puts everything he has into his work. ................ Y  N
26. Railroaders are always ready to help each other. .................. Y  N
27. Most railroaders love their job. .................................... Y  N
28. It takes years to make a good railroader. .......................... Y  N
29. A railroader will always go back to railroading. .................... Y  N
30. Railroading takes a lot of skill. ................................... Y  N
31. There's something about railroading that draws you back.......... Y  N
32. You have to be able to take responsibility to be a railroader... Y  N
<table>
<thead>
<tr>
<th>Statement</th>
<th>Y</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>33. Railroading is a high class job.</td>
<td></td>
<td>N</td>
</tr>
<tr>
<td>34. A railroader is pretty independent.</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>35. There's always something new to learn on the railroad.</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>36. Railroaders think their job is &quot;tops&quot;.</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>37. Once a railroader, always a railroader.</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>38. Railroading is a big job.</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>39. Railroading gets in your blood.</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>40. It takes a lot of experience and ability to be a railroader.</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>41. Railroaders work for the good of their country.</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>42. Railroaders are good providers.</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>43. Railroading is a worthwhile job.</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>44. You can work your way up on the railroad.</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>45. A railroader is usually a pretty good stick.</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>46. Railroaders go back to railroading because they don't know anything else.</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>47. Railroading is just a job.</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>48. You always get fair treatment on the railroad.</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>49. Railroading is easy work.</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>50. A railroader takes a lot of interest in his work.</td>
<td>N</td>
<td></td>
</tr>
</tbody>
</table>

Now that you have circled either "Y" or "N" after each of the statements I would like you to turn to the last page and answer the few brief but important questions there.
PERSONAL DATA

In order for my study of railroads to mean anything it is very important to have the following information about your career on the railroads. Please answer all the questions by circling the right answer or filling in the blank.


Are you: Married Single Divorced Separated (circle one)

Years of Railroading

Present Classification

Present job working on. Circle one Passenger Freight
Circle one Conductor Brakeman Flagman
Circle one Regular Regular Pool Extra Bd.

Seniority date in this division (as near as possible)

What does the average man make on your present job in a year?

Do you make more or less than the average? More Less (circle one)

Do you come from a railroading family? Yes No (circle one)

Was your grandfather a railroader? Yes No (circle one)

Number of railroaders you are related to in some way

Was your Father a railroader? Yes No (Circle one).

I want to thank you very much for doing this important job for me. I hope you will feel free to fill out the post card asking me to send you a copy of the results of this study when it is completed.

Now I would like you to place this completed form in the envelope that is stamped and addressed to me at the University and place it in a mail box as soon as possible.

Sincerely yours,

Charles W. Wester
Fellow, The Social Science Research Council
Appendix E

Final Questionnaire
<table>
<thead>
<tr>
<th>Statement</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Railroading gets in your blood.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>If you felt the statement was true, you would circle No. 1, as in the sample. If you were a little less certain, you would circle No. 2, and so on. Circle only one answer for each question.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. A railroader is any man who works for the railroad.</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>2. Railroaders stick together.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3. Only men who work in operating service are real railroaders.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4. I am proud to be a railroader.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5. Railroading takes a lot of nerve.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>6. Railroaders are a good bunch of fellows to work with.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>7. I always wanted to be a railroader.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>8. Railroaders are well respected in their neighborhood.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>9. There is something fascinating about railroading.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>10. The best thing about railroading is the money in it.</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>11. Even when they gripe, railroaders don't mean it.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
12. A railroader's job is to serve the public.

   1 2 3 4
   True Probably true Probably false False

13. A railroader's credit is always good.

   1 2 3 4
   True Probably true Probably false False

14. Railroading is just a laboring job.

   1 2 3 4
   True Probably true Probably false False

15. There's something more to railroading than just payday.

   1 2 3 4
   True Probably true Probably false False

16. A railroader will always go back to railroading.

   1 2 3 4
   True Probably true Probably false False

17. Railroading is a high class job.

   1 2 3 4
   True Probably true Probably false False

18. A railroader is pretty independent.

   1 2 3 4
   True Probably true Probably false False

19. Railroaders think their job is "tops".

   1 2 3 4
   True Probably true Probably false False

20. Once a railroader, always a railroader.

   1 2 3 4
   True Probably true Probably false False

21. You can work your way up on the railroad.

   1 2 3 4
   True Probably true Probably false False

22. Railroaders go back to railroading because they don't know anything else.

   1 2 3 4
   True Probably true Probably false False

23. Railroading is just a job.

   1 2 3 4
   True Probably true Probably false False

24. You always get fair treatment on the railroad.

   1 2 3 4
   True Probably true Probably false False

25. Railroading is easy work.

   1 2 3 4
   True Probably true Probably false False
Here are some statements made by railroaders like yourself about diesel and steam locomotive power. Please give your views about the truth in these statements. Again, circle the answer that most nearly describes your opinion or your best guess. Don't worry about giving a "right" answer, because it is your honest opinion that is important.

1. The diesel just won't hold up like the steam engine.
   - True  Probably true  Probably false  False

2. Diesels are cheaper to operate than steam engines.
   - True  Probably true  Probably false  False

3. A lot of diesels catch on fire.
   - True  Probably true  Probably false  False

4. Maintenance on diesels will eventually be higher than steam.
   - True  Probably true  Probably false  False

5. You can't see signals out of a diesel.
   - True  Probably true  Probably false  False

6. No true railroader would want a diesel engine.
   - True  Probably true  Probably false  False

7. Steam engines will always move where diesels sometimes won't.
   - True  Probably true  Probably false  False

8. Diesel engines save a lot of work for the railroader.
   - True  Probably true  Probably false  False

9. You can't switch as fast with diesels.
   - True  Probably true  Probably false  False

10. Steam and railroading go together like ham and eggs.
    - True  Probably true  Probably false  False

11. Coal hauling roads will never switch to diesel.
    - True  Probably true  Probably false  False

12. It's hard to judge the speed of a diesel.
    - True  Probably true  Probably false  False
<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>13. The diesel seems like a streetcar.</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>True</td>
<td>Probably true</td>
<td>Probably false</td>
<td>False</td>
</tr>
<tr>
<td>14. The diesel horn is loud and unpleasant to people.</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>True</td>
<td>Probably true</td>
<td>Probably false</td>
<td>False</td>
</tr>
<tr>
<td>15. Diesels are too new to tell much about them.</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>True</td>
<td>Probably true</td>
<td>Probably false</td>
<td>False</td>
</tr>
<tr>
<td>16. Diesels are easier to work with.</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>True</td>
<td>Probably true</td>
<td>Probably false</td>
<td>False</td>
</tr>
<tr>
<td>17. We should save steam in case of a national emergency.</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>True</td>
<td>Probably true</td>
<td>Probably false</td>
<td>False</td>
</tr>
<tr>
<td>18. Railroads are taking a big financial risk with diesels.</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>True</td>
<td>Probably true</td>
<td>Probably false</td>
<td>False</td>
</tr>
<tr>
<td>19. Diesels are quieter than steam engines.</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>True</td>
<td>Probably true</td>
<td>Probably false</td>
<td>False</td>
</tr>
<tr>
<td>20. The diesel is an advantage for the worker.</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>True</td>
<td>Probably true</td>
<td>Probably false</td>
<td>False</td>
</tr>
<tr>
<td>21. Keeping a lot of men working is more important than saving money with diesels.</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>True</td>
<td>Probably true</td>
<td>Probably false</td>
<td>False</td>
</tr>
<tr>
<td>22. Some railroads have found the diesel a disadvantage with heavy tonnage.</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>True</td>
<td>Probably true</td>
<td>Probably false</td>
<td>False</td>
</tr>
<tr>
<td>23. Diesel power will mean more regular hours for the worker.</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>True</td>
<td>Probably true</td>
<td>Probably false</td>
<td>False</td>
</tr>
<tr>
<td>24. Diesels break down easily.</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>True</td>
<td>Probably true</td>
<td>Probably false</td>
<td>False</td>
</tr>
<tr>
<td>25. Diesel fumes are more harmful than coal smoke.</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>True</td>
<td>Probably true</td>
<td>Probably false</td>
<td>False</td>
</tr>
</tbody>
</table>
26. Railroads have hurt themselves by loss of coal revenue with diesels.
   | True | Probably true | Probably false | False |
   | 1    | 2              | 3             | 4     |

27. You have to have diesels to keep the public satisfied.
   | True | Probably true | Probably false | False |
   | 1    | 2              | 3             | 4     |

28. You just can't beat a diesel engine.
   | True | Probably true | Probably false | False |
   | 1    | 2              | 3             | 4     |

29. A steam engine often has to help a diesel.
   | True | Probably true | Probably false | False |
   | 1    | 2              | 3             | 4     |

30. You feel more secure when you are riding a diesel train.
   | True | Probably true | Probably false | False |
   | 1    | 2              | 3             | 4     |

31. There is a higher maintenance cost on diesels.
   | True | Probably true | Probably false | False |
   | 1    | 2              | 3             | 4     |

32. Engine crews will live longer with diesel.
   | True | Probably true | Probably false | False |
   | 1    | 2              | 3             | 4     |

33. Everybody benefits from the diesel.
   | True | Probably true | Probably false | False |
   | 1    | 2              | 3             | 4     |

34. The diesel cuts off too many jobs.
   | True | Probably true | Probably false | False |
   | 1    | 2              | 3             | 4     |

35. The steam engines beat a brakeman to death.
   | True | Probably true | Probably false | False |
   | 1    | 2              | 3             | 4     |

36. The diesels are healthier for the workman.
   | True | Probably true | Probably false | False |
   | 1    | 2              | 3             | 4     |

37. It's hard for a trainman to get off and on a diesel.
   | True | Probably true | Probably false | False |
   | 1    | 2              | 3             | 4     |

38. Diesels burn up too fast.
   | True | Probably true | Probably false | False |
   | 1    | 2              | 3             | 4     |

39. Diesels are going to create a lot of new jobs.
   | True | Probably true | Probably false | False |
   | 1    | 2              | 3             | 4     |

40. Fuel oil might run out so it's best to keep steam engines.
   | True | Probably true | Probably false | False |
   | 1    | 2              | 3             | 4     |
What You Think About Your Job

The following statements show some of the ways men feel about the work they do. Please put a check mark in front of the statement which indicates best how you feel about each question.

1. Place a check mark in front of the statement which tells best how good a job you have.
   - A. The job is an excellent one, very much above the average.
   - B. The job is a fairly good one.
   - C. The job is only average.
   - D. The job is not as good as the average in this kind of work.
   - E. The job is a very poor one, very much below the average in this kind of work.

2. Place a check mark in front of the statement which best describes your feelings about your job.
   - A. I am very satisfied and happy on this job.
   - B. I am fairly well satisfied on this job.
   - C. I am neither satisfied nor dissatisfied; it is just an average job.
   - D. I am a little dissatisfied on this job.
   - E. I am very dissatisfied and unhappy on this job.

3. Check one of the following statements to show how much of the time you are satisfied with your job.
   - A. Most of the time.
   - B. A good deal of the time.
   - C. About half of the time.
   - D. Occasionally.
   - E. Seldom.

4. Place a check mark in front of the statement which best tells what kind of a railroad it is to work for.
   - A. It is an excellent railroad to work for, one of the best railroads I know of.
   - B. It is a good railroad to work for, but not one of the best.
   - C. It is only an average railroad to work for. Many others are just as good.
   - D. It is below average as a railroad to work for. Many others are better.
   - E. It is probably one of the poorest railroads to work for that I know of.

5. Place a check mark in front of the statement which tells best how your feelings compare with those of other people you know.
   - A. I dislike my job much more than most people dislike theirs.
   - B. I dislike my job more than most people dislike theirs.
   - C. I like my job about as well as most people like theirs.
   - D. I like my job better than most people like theirs.
   - E. I like my job much better than most people like theirs.
6. Place a check mark in front of the statement which tells best how you feel about the work you do on your job.

A. The work I do is very unpleasant. I dislike it.
B. The work I do is not pleasant.
C. The work is "just about average". I don't have any particular feeling about whether it is pleasant or not.
D. The work is pleasant and enjoyable.
E. The work is very enjoyable. I very much like to do the work called for on this job.

7. Check one of the following which best describes any general conditions which affect your work or comfort on this job.

A. General working conditions are very bad.
B. General working conditions are poor, not so good as the average for this kind of work.
C. General working conditions are about average, neither good nor bad.
D. General working conditions are good, better than average.
E. General working conditions are very good, much better than average for this kind of job.

8. Check one of the following statements which best tells how you feel about changing your job.

A. I would quit this job at once if I had anything else to do.
B. I would take almost any other job in which I could earn as much as I am earning here.
C. This job is as good as the average, and I would just as soon have it as any other for the same money.
D. I am not eager to change jobs but would do so if I could make more money.
E. I do not want to change jobs even for more money because this is a good one.

9. Suppose you have a very good friend who is looking for a job in your line of work, and you know of a vacancy on this railroad which your friend is well qualified to fill. Would you:

A. Recommend this job as a good one to apply for?
B. Recommend job but caution your friend about its shortcomings?
C. Tell your friend about the vacancy but not anything else; then let him decide whether to apply or not?
D. Tell your friend about the vacancy but suggest that he look for other vacancies elsewhere before applying?
E. Try to discourage your friend from applying by telling him the bad things about the job?

10. On the line below, place a check mark to show how well satisfied you are with this job. You may place your mark anywhere on the line, either above one of the statements or between them.

Completely More dissatisfied About half More satisfied Completely dissatisfied fied than and half than dissatis- satisfied satisfied fied
PERSONAL DATA

It is very important to have the following information about your career on the railroad. Please answer all the questions by circling the right answer or filling in the blank.


2. Were you born in: city; country; small town? (Circle one)

3. Are you: married; single; divorced; separated? (Circle one)

4. Years of railroading __ 5. Present classification __________

6. Your present job: a. (Circle one) Passenger; Freight
   b. (Circle one) Conductor; Brakeman; Flagman
   c. (Circle one) Regular; Regular Pool; Extra Bd.

7. How much experience have you had with trains using diesel power? (Circle one)
   a. very great deal; quite a lot; not very much; practically none

8. How much have you read about diesel power and railroading? (Circle one)
   a. very great deal; quite a lot; not very much; practically none

9. Seniority date in this division (as near as possible) __________

10. What does the average man on your present job make in a year? __________

11. Do you make more or less than the average? (Circle one) More; Less

12. Do you come from a railroading family? (Circle one) Yes; No

13. Was your grandfather a railroader? (Circle one) Yes; No

14. Was your father a railroader? (Circle one) Yes; No

15. Number of railroaders you are or have been related to __________

16. What was the last grade you finished in school? (Circle one) 1 2 3 4 5 6 7 8 9 10 11 12 College

I want to thank you very much for doing this important job for me. If you would like me to send you a copy of the results of this study when it is completed, I hope you will enclose a note to that effect. Please place this completed form in the envelope that is stamped and addressed to me at my home, and mail it as soon as possible.

Very truly yours,

Charles M. Westie
BIBLIOGRAPHY

A. BOOKS


B. SCIENTIFIC ARTICLES


C. BULLETINS

Bullock, Robert, Social Factors Related to Job Satisfaction, Bureau of Business Research, The Ohio State University, 1952.


C. BULLETINS


I, Charles M. Westie, was born in Houghton, Michigan, November 27, 1919. I received my secondary school education in the public schools of Dearborn, Michigan. My undergraduate training was obtained at Central Michigan College of Education, Mt. Pleasant, Michigan, from which I received the degree Bachelor of Science in 1945. From The Ohio State University, I received the degree Master of Arts in 1949. While in residence at The Ohio State University, I acted as research assistant for the Personnel Research Board, 1948-49, and teaching assistant in the Department of Sociology, 1949-51. In 1951 I was appointed a Research Training Fellow of the Social Science Research Council for a one-year period, during which time the field work for the present study was substantially completed.