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A STUDY OF THE LUMBER INDUSTRY IN IDAHO, PART III.

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DATA COLLECTED FROM 27 LUMBER MILLS THROUGH 131 SUPERVISOR INTERVIEWS AND 1,192 EMPLOYEE QUESTIONNAIRES IDENTIFIED 188 JOB TITLES FOR 3,871 EMPLOYEES. EMPLOYMENT EXPANSION WAS PLANNED BY 36 FIRMS, AND A DECREASE WAS EXPECTED BY 20 FIRMS. MOST FIRMS MADE EMPLOYMENT PROJECTIONS ON AN ANNUAL BASIS, REFLECTING THEIR ANNUAL BUDGET PRACTICES. TECHNOLOGICAL CHANGES WERE EXPECTED IN MATERIALS HANDLING, PROCESS AUTOMATION, AND MACHINE SYSTEMS. PROMOTION IN THE FIELD WAS BASED ON SENIORITY AND ABILITY. EMPLOYEES' AGES RANGED FROM 18 TO 68 WITH THE MEDIAN BETWEEN 33 AND 34 YEARS. EIGHTY-FOUR PERCENT OF THE EMPLOYEES HAD LIVED IN THEIR RESPECTIVE COMMUNITIES AT LEAST 5 YEARS. ONLY 3 PERCENT HAD LESS THAN 8 YEARS OF EDUCATION, AND 57 PERCENT HAD COMPLETED 12 OR MORE YEARS. COURSES WHICH WERE CHECKED BY MORE THAN HALF THE SUPERVISORS AS BEING USEFUL WERE--(1) BASIC ARITHMETIC, (2) WELDING, (3) HAND TOOL USAGE, AND (4) FIRST AID AND SAFETY. BASIC ARITHMETIC WAS THE COURSE MOST OFTEN LISTED BY THE EMPLOYEES AS BEING USEFUL. WELDING WAS THE COURSE LISTED AS MOST DESIRED BY EMPLOYEES. QUESTIONNAIRES, JOB TITLE LISTS, AND NUMBERS OF EMPLOYEES ARE GIVEN. (EM)

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A STUDY OF THE LUMBER INDUSTRY IN IDAHO
PART III

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FOREWORD

This third part of the study of the lumber industry in Idaho reports the results of personal interviews with foremen and other supervisory personnel, questionnaire responses of several hundred production workers, and certain data relative to vocational training in the industry. As in the two earlier publications, the terms "lumber" and "lumbering" are used in a general sense to include logging, plus the three main divisions of lumber production, veneer and plywood, and paper and allied products. The context should reveal when the term lumber or lumbering refers to lumber production per se, as opposed to the other three divisions within the industry.

The contents of this report reveal that several educational courses are identified rather consistently by workers in lumbering as desirable background for a worker who expects to enter, and progress in, the industry. Rather specific vocational courses and general education courses both have a potential contribution to make in preparing workers for jobs at all skill levels. The lumber industry has changed markedly over the past twenty years. The old-time concept of the lumber worker as a rugged physical specimen, renowned almost as much for his fighting and drinking abilities as for his work capabilities, is passe. The industry is moving toward work activities which place far more emphasis on intellectual capacities and the skills and abilities which can be developed through educational experiences.

This study (including the contents of the earlier Parts I and II) has concentrated on the lumber industry. It seems necessary to emphasize, however, that the reader who does not generalize the results beyond this one industry will miss a significant portion of the value intended. The staff of the State Occupational Research Unit never expected, at any point in the study, to develop a study program specifically for those persons who intend to enter the lumber industry. Nor was it intended that this study would yield specific recommendations for curriculum construction or course content. Rather, we selected an industry for study that has received little consideration in formal educational planning, hoping to demonstrate that a case could be made for including the needs of future lumber workers in a general program of vocational education.

The reader is asked, therefore, to evaluate the general design of this study regarding its potential for the vocational counseling and education of youth and adults. If similar studies were conducted in all industries in the Idaho labor force, plus several of the larger occupational groups, would the results be satisfactory for vocational planning and guidance? Does this study only go part of the way, thus logically requiring additional, more specific studies before the results have any immediate practical value? If the study is largely, or entirely, inadequate, what is the basic design or pattern which should be followed? Constructive criticism and suggestions for future studies will be welcomed from anyone concerned with the entire program of educating Idaho youth and adults.

A STUDY OF THE LUMBER INDUSTRY IN IDAHO
PART III

This third part of the study of the lumber industry in Idaho contains the results of field interviews and questionnaire responses from both workers and management officials. Also, information pertaining to vocational courses in this industry is presented. More specifically, the basic data on which this report is based were derived from four major sources:

1. A total of 27 mills was visited, and interviews were held with 131 foremen, supervisors, and personnel officials. These mills varied from those with less than 20 employees to over 2,000 employees, and were distributed geographically from the northern panhandle area of Idaho to the southwestern area.

2. Fourteen of the mills cooperated with the State Occupational Research Unit in distributing more than 3,000 questionnaires to their production workers. A total of 1192 questionnaires was returned and their contents were analyzed.

3. A total of 481 questionnaires was mailed to all remaining lumbering firms and operators in Idaho (including logging contractors) who had a record of employing one or more workers during the year preceding August, 1965. This phase of the study yielded an additional 150 questionnaires.

4. Data pertaining to the types of vocational courses and numbers of students in each for lumber workers during the five-year period 1960-1965 were supplied by the Idaho State Board for Vocational Education.

The remainder of this report presents in some detail the results obtained from the four major sources already listed. The contents are divided into five sections, with the following titles: Results From Personal Interviews, Results From Worker Questionnaires, Results From Mail Questionnaires, Vocational Courses in the Lumber Industry, and General Discussion and Conclusions. The methodology, instruments, etc. used in each phase of the study, and the important results, will be presented under appropriate sub-headings within each of the major sections.

RESULTS FROM PERSONAL INTERVIEWS

The foremen, supervisors, and personnel officials interviewed, numbering 131, were contacted in their own individual work environments. The staff of the State Occupational Research Unit visited personally most of the 27 mills included in our study. This involved going into the plant and into its various departments. We not only interviewed foremen and others in their everyday work environments, but also had occasion to observe the phases of production, jobs, machine processes,

etc. within the department. An interview schedule, composed of eleven questions, was constructed during the early phases of our study, and this schedule of questions was followed during each interview. Each question will follow in order under an appropriate heading, and the results obtained will be presented.

Date of Interview

The first question reads "Record date of visit?" This information was recorded for purposes of identification and record-keeping. Interviews began on October 19, 1965 and were completed on December 22, 1965.

Name of Interviewee

The second question reads "Name of foreman or other supervisory personnel interviewed?" This also was included for identification and record-keeping purposes. As already indicated, 131 persons were interviewed.

Name of Department

Question three of the interview schedule reads "Name of the department?" It was planned originally that some separate analyses would be made for different departments, both for results of the personal interviews and for the results obtained from the worker questionnaires. This was not done, however, for two main reasons. First, a department of a given name is not necessarily comparable to that in another company with the same name. Second, the number of those interviewed personally was too small for a satisfactory distribution over all departments, and the low percentage of returns in the worker questionnaire study did not indicate that departmental analyses would be worthwhile. We have listed, for whatever interest and value it may have, the major departments reported by workers who returned questionnaires (see page 11).

Jobs and Workers in Each

Question four of the interview schedule asks for "Jobs in the department and number of workers in each job?" As we visited each company and its several departments, we identified each job by title, wrote a short description of the job duties, and recorded the number of workers in the job. This was supplemented in a few cases by a complete list of jobs supplied by the company. These jobs were converted into titles and codes according to the third edition of the Dictionary of Occupational Titles (U.S. Department of Labor, 1965), and appear as Appendixes A, B, and C of this report (see pages 29-35).

Perhaps a word of explanation is in order before the contents of Appendixes A, B, and C are discussed. First, the Dictionary of Occupational Titles (DOT) is based on a broader scheme of classification than that used in most of the mills we visited. Consequently, some jobs which have rather specific names in a given company may not appear by that name in the Appendixes. Rather, they are combined with other

similar jobs and appear under a more general title. For example, Woodworking-Machine Feeder and Woodworking-Machine Operator both contain a variety of more specific jobs. Second, common titles in the lumber industry may be changed in the DOT. For example, "lumber pullers" on a planer chain are coded under Sorter (woodworking). Finally, we resorted to a DOT listing as a means of presenting some detail that the reader could expand if so desired. On the one hand, a reader unfamiliar with the industry can gain some knowledge of the jobs and their various duties by reading the occupational descriptions in the DOT. On the other hand, a complete listing of the job titles and descriptions obtained in our field research would have required many pages--and probably several photographs would have been needed to make the material comprehensible. This much detail would have been peripheral to our main purpose of determining the general skills, knowledges, and abilities which are desirable for persons entering the lumber industry. As it stands, the material in Appendixes A, B, and C (see pages 29-35) makes possible a few general conclusions which are appropriate for this report. The reader interested in more detail might read Panshin, et al. (1962, especially Chapters 7, 8, and 17) or, better yet, do some field visiting in the lumber industry.

The three major divisions of the lumber industry (disregarding logging which logically might be considered a fourth major division) are reflected in Appendixes A, B, and C, in which are presented Paper and Allied Products Occupations, Lumbering Occupations, and Veneer and Plywood Occupations, respectively. The DOT title and code number are contained in the first column (extreme left). The second (middle) column contains the grand total of persons employed in each occupation in all of the mills we visited. The DOT page number is given in the last column to expedite the location of each title. A few highlights from each of the three Appendixes will be given here. The reader interested in more detail may examine the Appendixes more thoroughly, and perhaps relate their contents to the DOT. Most companies of any size have progression charts showing the jobs which are placed at various seniority and/or skill levels, and these usually can be obtained for purposes of research and educational planning.

A perusal of the contents of Appendix A, Paper and Allied Products Occupations, reveals that the highest numbers of workers are employed in the following occupations: Electrician (any ind.); Industrial-Truck Operator; Material Handler; Millwright; Stock Clerk; Welder, Combination; Winder-Man Helper; and Winder Man, Paper Machine. Some of the jobs frequently filled by new employees are: Core-Cutter and Reamer; Laboratory-Sample Carrier; Material Handler; Packager, Hand; Porter II; and Winder-Man Helper. Although the work force is composed predominantly of males, a few females are employed in such jobs as: Layboy Tender; Packager, Hand; Shipping Checker (clerical); Stenciler; and Weigher I (clerical). Examples of occupations which require considerable skill and experience are: Back Tender, Paper Machine; Digester Operator (paper & pulp); Evaporator Operator (paper & pulp); Fourdrinier-Machine Tender; Instrument Repairman I; Laboratory Tester I; Quality-Control Technician (profess. & kin.); and Recovery Operator (paper & pulp). It is interesting to note that a number of skilled trades are represented

which also are found in other industries, such as: Carpenter, Maintenance; Electrician (any ind.); Machinist I; Millwright; Painter (const); Pipefitter I; Refrigeration Mechanic (any ind.); and Welder, Combination.

The contents of Appendix B, Lumbering Occupations, reflect employment in those mills and departments engaged in the production of standard lumber products or various lumber specialty products. Those jobs employing the largest number of workers are: Chainman (sawmill); Grader (woodworking); Industrial-Truck Operator; Lumber Handler; Material Handler; Millwright; Order Clerk II; Porter II; and Sorter (woodworking). Examples of entry jobs filled by new employees are: Chainman (sawmill); Lumber Handler; Lumber Straightener; Material Handler; Packager, Hand; Pondman (sawmill); Porter II; Sorter (woodworking); Stickerman; and Woodworking-Machine Feeder. Jobs requiring considerable skill and experience are: Edger Man; Electric-Bridge-Or-Gantry-Crane Operator; Electric-Monorail-Crane Operator; Gang Sawyer; Grader (woodworking); Head Sawyer; Kiln Operator (woodworking); Knife Grinder; Laboratory Tester I; Machine Set-up Man (woodworking); Order Clerk II; Pile-Driver Operator; Power-Shovel Operator; Saw Filer; Tallyman; and Trimmerman. A few females find employment, especially in departments which produce small specialty items, in such jobs as: Material Handler; Packager, Hand; and Woodworking-Machine Feeder. As we noted in the discussion of the contents of Appendix A, several skilled trades are represented which are common to several other industries.

Appendix C, Veneer and Plywood Occupations, indicates the following jobs are highest in numbers employed: Chainman (sawmill); Core Layer, Plywood; Grader (woodworking); Industrial-Truck Operator; Material Handler; and Veneer Drier. Entry jobs are: Chainman (sawmill); Core Layer, Plywood; Lumber Straightener; Material Handler; Porter II; Sorter (woodworking); Veneer-Jointer Helper; and Woodworking-Machine Feeder. Jobs requiring relatively high skill and long experience are: Cut-Off Sawyer, Log; Grader (woodworking); Hot-Plate-Plywood-Press Operator; Knife Grinder; Order Clerk II; Veneer Jointer; Veneer-Lathe Operator; and Veneer-Slicing-Machine Operator. And once again several common skilled trades are represented.

Departmental Organization

Item five on the interview schedule asked for "General departmental organization--entry jobs and lines of progression to highest positions?" This information blended so well with that concerning jobs that it has already been reported under the preceding heading.

Placement, Promotion, and Training

The sixth item was composed of two related questions: "How is placement and promotion determined (e.g. seniority, experience, work capability, etc.)? Is formal training conducted in the department?" The first question resulted in a variety of answers, all of which might be grouped into two major types. On the one hand, if a mill was unionized and employed a fairly large number of workers, seniority was the

main determiner in promotion and placement. On the other hand, smaller mills and those without union contracts seemed to place and promote workers more on the basis of ability and past work experience. It is important to note, however, that both of these methods were represented in varying degrees in most of the plants we visited. Mills which place and promote workers by seniority usually demand that the worker be able to perform the job, or he does not remain in it for long. Furthermore, some companies with union contracts have retained the right to select whomever they choose for a few responsible jobs. Some companies, especially the smaller ones, hire skilled men to fill a certain position, but would prefer to move one of their present employees into the position if he could qualify.

The question regarding formal training also yielded a variety of answers. The beginning worker in lumbering is most likely to receive his training on the job. The usual method is for the department foreman or leadman to give a new worker a few verbal instructions and possibly a demonstration of the job tasks. The worker then proceeds on his own with some supervision and/or periodic checks by the supervisor. Or, perhaps more frequently, the new employee is placed with an experienced worker who instructs him as the work progresses. Additional arrangements are found in some mills, such as allowing workers to spend a few minutes a day in the next higher job in the line of progression. The worker may be paid extra wages if he returns to the mill on another shift specifically to observe and learn a more complex job. Some departments rotate workers so that they may learn a variety of jobs, and thus be able to fill in when certain workers are absent. A few of the larger mills have formal training programs for skilled jobs. The worker may be required to pass psychological and/or trade information tests to enter these programs, and similar tests may be required periodically as training progresses.

Educational Background

Question eight on the interview schedule reads "What educational experiences and abilities are desirable?" When this question was asked, we gave the interviewee a list of courses identical to those listed on the second and third pages of the questionnaire later handed out to production workers in several mills (see Appendix D, page 39). We asked him to look over the list and identify any courses that he would recommend for a worker entering his department and who planned to remain for a long period and progress to the more skilled and demanding jobs. The following courses were checked as desirable by 45 (about one-third) or more of the 131 foremen and other supervisory personnel interviewed. The number checking each course is given in parentheses:

Basic arithmetic (95)	Basic electricity (54)	First Aid & Safety (80)
Blueprint reading (53)	Hand tool usage (65)	Plant supervision (52)
Welding (65)	Reading (52)	Spelling (48)
Writing (54)	Machine shop (48)	Pumps & hydraulics (46)
	Labor management relations (57)	

Such courses as basic arithmetic, first aid & safety, hand tool usage, welding, basic electricity, blueprint reading, machine shop, and pumps & hydraulics seem logical for the lumber industry. It is interesting to note that labor management relations and plant supervision were checked frequently. This reflects the importance of the interpersonal situation, especially as it relates to workers' relationships with their supervisors. "Personality" problems account for a sizeable percentage of discharges in the lumber industry. It is a little surprising, perhaps, to find reading, writing, and spelling in this list. On the one hand, this should refute the assumption that lumber mill workers need nothing more than the ability to follow simple verbal instructions. On the other hand, this might reflect an over-reaction, as many of the foremen probably have had problems with a few employees who were functional illiterates.

During this part of our interviews, we got the impression from several foremen that formal education per se was not too important. A few stated this specifically, and others seemed to imply it by their comments and attitudes. We acknowledge, therefore, that we cannot make a strong case for vocational training in the lumber industry. But at the same time we believe the courses listed above would be useful in guiding and educating youth. The fact that the foremen were selective in their choice of courses suggests that some value may be placed on their responses. The following courses received less than five checks:

Biology
Radio & TV repair
Plastics
Journalism
Ceramics
Geology
Foreign languages
Commercial printing
Wood carving
Botany
Farm equipment repair
Leather working
Pattern making
Stone polishing
Auto body-fender
Zoology
Natural science
Agriculture
Photography
Jewelry making
Artistic metal
Mosaics
Upholstery

While some of these courses may have been unfamiliar to several of the foremen, there does not appear to be any logical relation between their content and the common job tasks in lumbering.

Employment Projections

Question nine on the interview schedule reads "Are expansions or decreases in manpower expected in this department?" This proved to be a fairly difficult question. It was included originally to provide an additional check regarding future employment trends. Several of the interviewees (a total of 40) did not respond to the question. Others gave very general predictions which could only be classed in three broad categories, namely, expansion, same, and reduction. Accordingly, all responses were so classified with the following result: 36 stated they anticipated an expansion, 35 indicated that they expected employment to remain about the same, and 20 expected a reduction in numbers employed. Departments which anticipated expansions, and those expecting employment to remain at present levels, were nearly equal in number. Those

anticipating reductions were slightly fewer in number, possibly reflecting some tendency to play down the possibility of an employment decline. These data added little to our projections of future employment based on other sources, and which were published in A Study of the Lumber Industry in Idaho, Part I. The interested reader is referred to this earlier publication of the State Occupational Research Unit which reports the results of this first phase of our study of lumbering.

Technological or Machine Changes

Question ten on the interview schedule asked: "Are technological or machine changes expected in the department which will alter present requirements for worker education and abilities?" This question yielded some very interesting results, and several foremen pointed out and explained changes which had occurred recently in their department. Some were fairly minute machine changes whereas others involved fairly extensive changes in the processing and general flow of raw materials. It seems appropriate first to explain an overall impression that we gained of production in this industry before we describe some of the more specific changes.

Briefly, lumbering consists of harvesting (logging), processing (in various types of mills), and shipment of the manufactured products. This should be accomplished with as little waste motion as possible. And the fewer men and machines that are required, the more profit the company will realize. We gained the impression that three broad principles governed the operation of the mills we visited:

1. All movements of raw materials should be made as efficiently as possible. That is, materials should follow as direct a route as possible from the woods through the mill and into transportation vehicles.

2. The raw materials should be handled as few times as possible to yield the final end product, and the flow should be as continuous as possible.

3. The various manufacturing processes should be designed and operated so as to get the most value from each piece of raw material processed.

While the above principles seem basic to most any manufacturing operation, it is interesting to note their effects in several of the mills we visited. For example, more than one mill had recently changed the flow of lumber from their unstacker into the planer. Formerly the lumber was unstacked after being removed from the dry kilns, sorted, and stored. Now these mills run much of the unstacked lumber directly into the planer, thus reducing handling and necessary storage space. Other mills have reduced storage space by improving their sales outlets so that freshly planed lumber can be transferred directly into the loading dock for shipment. Such changes involve the installation of new machines, some of which produce at a faster rate, and the rearrangement of existing machines. Usually production figures climb without an increase

in manpower, and in some cases workers are reduced in number or are reassigned to other jobs in the plant. Worker demands (e.g. for alertness, flexibility, knowledge of machines and processes, and sustained attention) appear to rise accordingly.

We noted further that several minor machine changes have been made in recent years. Several routine labor jobs have been eliminated by automatic attachments, such as drop sorters, automatic edging pickers, automatic tail sawyers, and automatic board turners. Also evident is the tendency, through mechanization and the combination of job tasks, to eliminate several jobs in a certain phase of production. This "streamlining" process is likely to continue, but certain qualifications must be stated. On the one hand, it is unlikely that sudden, widespread changes will occur. Several processes are fairly standard, and probably cannot be improved to any great extent. Machinery is expensive, and new innovations may not justify the expense of replacing machines already in production. On the other hand, pressure will continue to reduce production costs, which will be reflected in machine changes and rearrangements of various phases of production. Furthermore, some mills have machinery which has been operating since before 1920, and replacements eventually will be necessary.

Future trends, some of which are already evident, indicate that lumbering production will increase in complexity. Some persons in the industry believe that data processing and computer systems will increase. There is a definite trend toward increased electrification of machinery, including electronic eyes and "solid state" equipment. Several relatively new machines have appeared on the market, such as electronic glue machines, high-speed planers, etc. We examined literature on a new machine called a "Beaver," which some think may mechanize the work of the head sawyer, edger man, trimmer man, and a few related processes. These new machines and processes will require more complex maintenance. The machines likely will require more adjustments, and there will be more gauges to read, thus requiring more training and ability on the part of the worker.

Future Projections

Question eleven on the interview schedule reads: "How far in advance can manpower needs and technological changes be predicted?" This question was included partially to facilitate interpretation of responses to question nine (see pages 6 and 7) which requested the interviewee to project his employment needs and departmental changes a few years hence. Question eleven is important in its own right, however, as educational planning of necessity requires projections of employment and training needs a decade or more into the future. Once again, several interviewees did not respond to this question. But a total of 78 interviewees gave us an answer, with the following results (intervals omitted had no responses):

Length of Projection	Number of Interviewees	Length of Projection	Number of Interviewees
Less than 1 month	4	1-2 years	4
1-2 months	1	2-3 years	11
2-3 months	1	3-4 years	6
3-4 months	2	4-5 years	5
6-7 months	10	5-10 years	5
12 months	26	10 years-up	3

It is obvious that the largest number of interviewees gave one year as their maximum prediction. And the majority indicated that they could predict one year or more in advance their manpower needs and departmental changes. Perhaps the large number stating one year reflects the policy in several mills we visited of operating on a yearly budget. Perhaps several of the interviewees were a little conservative in their answer for this reason. The very small percentage who answered five years or more, if taken literally, suggests that long-range predictions are very difficult to make at this level of management. It seems, however, that higher management officials, such as owners and executive officers, are able to make predictions more than a decade into the future. This latter conclusion seems to be reflected in the outlook data presented in our first publication (Part I) of the study of lumbering in Idaho.

RESULTS FROM WORKER QUESTIONNAIRES

Hoppock (1963, pp. 28-29) states that the original sources of all occupational information are ". . . the worker who does the job, the person who pays him to do it, and the government bureau which issues licenses and regulates employment." Keeping this paradigm in mind, we tried, in addition to the interviews held with foremen and other supervisory personnel, to arrange for interviews with production workers. We thought, in other words, that foremen and supervisors as a group might differ from production workers, and that responses from both groups should be obtained and compared.

We were not able, however, to make arrangements for individual interviews with production workers. All of the companies we visited could free foremen and other supervisors for interviews which lasted from about 30 minutes to one hour. But production workers were busy on their jobs, and their removal frequently would stop or impede a much larger phase of production. Replacements perhaps could have been found for the workers, but it did not seem appropriate to ask the companies to assume this added expense. We did what appeared to be the next best thing, namely, a questionnaire was constructed to be completed by production workers. Appendix D, pages 36-40, contains a sample of the three-page questionnaire and the accompanying cover letter. The questionnaire was constructed by the Unit staff, and was field tested on about a dozen workers in the industry prior to the larger distributions.

The questionnaires, in most cases, were handed out by foremen to the workers assigned to their departments. After a day or two, the foremen collected the completed questionnaires. The main plant office, or some designated individual, then collected the completed questionnaires from the foremen and routed them on to the State Occupational Research Unit. In a few cases, the questionnaire was placed with the worker's pay check, with directions to return the completed forms to the main company office. As indicated earlier (see page 1) 14 of the 27 mills contacted in our study agreed to distribute the questionnaires to their production workers. This total of 14 mills represents 100 per cent compliance with our request, as we selected these mills as representative and all agreed to participate in the questionnaire study.

We hoped that the involvement of company officials in the distribution and collection of the questionnaires would result in a good percentage of returns. But our hopes were not realized, as the highest percentage was only about 50 per cent.[1] This ranged on down to less than 5 per cent in some mills. It seemed apparent that the company officials who worked with us did their "reasonable best" to obtain the completed questionnaires from their workers. Some workers refused to complete the questionnaires, and it was decided that no pressure should be exerted in such cases. Others apparently took the questionnaire home and forgot to return it. Ordinarily we would not place much emphasis on such data, which likely are biased due to the small return percentage. We believe, however, that our sample of foremen and other supervisory personnel contacted for individual interviews was fairly representative. Indeed, our interview results seem, in and of themselves, to constitute a fairly extensive and reliable study. Therefore, it seems to us that we are justified in presenting the results of our questionnaire study for cautious interpretations, and comparisons, where possible, with the results obtained from individual interviews.

The questionnaire (see Appendix D, pages 36-40) was composed of three pages. The first page contained eleven questions. The next two pages contained an identical list of courses in which the worker was to indicate, on page two, the courses he had already taken in schools and other institutions or types of training, and on page three the courses he would like to take now. A total of 1192 questionnaires was returned, and the responses were transferred to IBM cards for analysis. The results will be presented in the remainder of this section under a series of headings. Responses to certain items do not total to 1192 due to omissions, ambiguities, etc. which required their omission during the data processing. The latter circumstances in no way affect the final conclusions.

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[1] One large mill we contacted distributed the questionnaires only to those workers below 40 years of age. It was felt that this group would be more likely to give useable answers to the questionnaires. The return rate was still considerably below 100 per cent.

Name

We considered omitting the name from the questionnaire. This might have resulted in more returns and more candid answers. We included the names, however, because this enabled the foremen to check the list of names for those workers who had not yet returned their questionnaires. Furthermore, we eliminated questions from the questionnaire that seemed too personal and therefore likely to discourage responses.

Departments and Divisions of the Plant

The workers who returned questionnaires were distributed as follows in various departments and divisions:

Departments & Divisions	Number of Respondents	Departments & Divisions	Number of Respondents
Main Office	6	Research & Development	7
Shipping Department	95	Press Dept. (plywood)	22
Planing Mill	189	Green Veneer	60
Yard (except logs)	17	Box Factory (cut-up)	43
Sawmill	203	Profile (moulding, etc.)	34
Green Chain	31	Pond	23
Dry Kiln	16	Warehouse	7
Stacker	17	Powerhouse	52
Unstacker	2	Bark Products	7
Grading	24	Laminated Beams	11
Glue Department	6	Log Yard	4
Maintenance	137	Scaling Department	2
Machine Shop	16	Paper Machine	62
Prestologs	3	Paper Finishing	6
Instrument Department	7	Paper Converting	8
Chemistry Laboratory	17	Wet Lap	9
Dry Veneer	9	Paper Machine (wet end)	27

The above numbers total 1179, thus indicating 13 omissions in the total of 1192 respondents.

It is evident that the numbers responding in several of the departments and divisions are too small for separate analyses. Since no separate analyses were made regarding departments or divisions, we did not think it necessary to include descriptions of the various departments or divisions presented in the above list. We doubt that such descriptions are necessary in this report. The interested reader or researcher can obtain such information through contacts with the State Occupational Research Unit, or by field visits with persons in the industry.

Age

The respondents were distributed as follows regarding years of age:

Years of Age	N*	Years of Age	N*	Years of Age	N*
18	12	35	42	52	15
19	19	36	40	53	8
20	27	37	40	54	17
21	30	38	38	55	17
22	39	39	51	56	13
23	40	40	24	57	10
24	35	41	24	58	13
25	54	42	24	59	10
26	45	43	14	60	8
27	38	44	12	61	2
28	41	45	18	62	11
29	54	46	15	63	5
30	43	47	15	64	7
31	39	48	16	65	4
32	37	49	20	66	0
33	36	50	14	67	0
34	37	51	9	68	1

*Number of Respondents

The figures in the "N" columns above total to 1183, thus indicating no responses from 9 of the 1192 respondents. The median falls between 33 and 34 years of age. Further examination reveals that the group tends to be young; 75 per cent are 41 years of age or younger. Very few (less than 3 per cent) are over 60 years of age. As indicated previously (see footnote, page 10), questionnaires were handed out only to those under 40 years of age in two large plants, thus accounting for some of the concentration in the younger age brackets. Perhaps the youth of the respondents enhances the value of the questionnaire results, as these persons are closer to their years of schooling and thus better able to relate their present work experience to past or anticipated educational experiences.

Present Job and Duties

We hoped originally to obtain a sample sufficiently large to make some separate analyses for individual occupations. Appendixes A, B, and C (see pages 29-35) contain several occupations with fairly large numbers employed which might be given individual study. Our low percentage of returns, however, indicated that the results would be biased. Thus,

the additional time and effort did not seem justified. Consequently, only the most common occupations (employing 20 persons or more within the grand total of 3871 employees accounted for in the three Appendixes) are listed here for reference:

DOT Title	N*	DOT Title	N
Material Handler	330	Lumber Straightener	34
Sorter	204	Pipefitter I	34
Grader	201	Stickerman	34
Chainman	190	Chipperman	33
Industrial-Truck Operator	164	Core Layer, Plywood	32
Lumber Handler	147	Cut-Off-Saw Operator	31
Millwright	113	Machinist	30
Porter II	103	Log Scaler	29
Order Clerk II	89	Packager, Hand	29
Woodworking-Machine Operator	75	Ripsaw Operator	28
Pondman	71	Watchman I	27
Straddle-Truck Operator	68	Resaw Operator	27
Stacker, Machine	66	Stock Clerk	24
Electrician	63	Winder-Man Helper	24
Trimmerman	63	Winder Man, Paper Machine	24
Woodworking-Machine Feeder	62	Car Cooper	24
Fireman, High Pressure	60	Kiln-Transfer Operator	24
Maintenance Mechanic	58	Core-Laying-Machine Operator	24
Edger Man I	58	Truck Driver, Light	23
Tallyman	53	Deckman	22
Oiler I	51	Packager, Machine	22
Saw Filer	49	Power-Plant Operator I	21
Head Sawyer	47	Power-Shovel Operator	21
Machine Set-up Man	47	Veneer Clipper	21
Slasher Operator	45	Fuel-House Man	21
Veneer Drier	36	Kiln Operator	21
Welder, Combination	36	Mixing-Machine Operator	20
Carpenter	35		

*Number of Employed Workers

Examination of the above list reveals that, while common laboring jobs are quite common in lumbering, several semi-skilled and skilled jobs also employ large numbers of workers. Material Handlers usually do routine work requiring little more than physical ability. Graders need considerable training and experience before they can qualify for their jobs.

The most common occupations (employing 20 persons or more) in the group of 1192 questionnaire respondents are:

DOT Title	N*	DOT Title	N*
Saw Operators (various)	95	Fireman, High Pressure	31
Material Handler	88	Porter II	29
Lumber Handler	81	Tallyman	27
Chainman	70	Laboratory Tester I	26
Grader	69	Pondman	24
Industrial-Truck Operator	64	Machine Set-up Man	23
Maintenance Mechanic II	46	Pipefitter I	20
Electrician	38	Woodworking-Machine Operator	20

*Number of Respondents

All of the above occupations except Laboratory Tester I are found in the larger list on the preceding page. It seems apparent that several persons who were laboratory sample carriers listed themselves as laboratory testers, thus accounting for the larger number in the questionnaire group. Further comparisons (not reported here) indicate that the vast majority of the occupations listed in Appendixes A, B, and C were represented in the questionnaires returned. Some additional analyses will be reported in relation to the results for question 8 (see pages 15-16).

Length of Time Employed

It will be shown later (see pages 21-22) that the lumber industry has a fairly high rate of turnover. This fifth item on the questionnaire provides some additional evidence in this regard. The following is a distribution according to the length of time the respondents had worked for their respective companies:

Years Employed	N*	Years Employed	N*
Less than 1	150	10-15	251
1-2	111	15-20	109
2-3	65	20-25	30
3-4	84	25-30	16
4-5	61	30-up	27
5-10	279		

*Number of Respondents

The above figures in the "N" columns total 1183, thus indicating that there were 9 omissions from the total of 1192. Several interpretations are suggested based on the above figures. Inspection reveals that 471, or 40 per cent, were employed less than five years. This suggests that several of the workers may be rather loosely attached to the industry, and may be expected to move on soon to other types of work. But it is also evident that a larger number of 530, or 45 per cent, has been employed between 5 and 15 years. Since we noted earlier that this group tends to be young (see page 12), this suggests that several of the workers have spent most of their working life in the lumber industry. This seems especially true of the remaining 182 workers, or 15 per cent, who have worked for the same company 15 years or more. Despite a

tendency for large numbers of workers to remain only a short time, perhaps the majority of workers who enter the lumber industry make this their main vocational field. Additional data to support this conclusion are presented in relation to question 8, the discussion of which begins below on this same page.

Residence and Mobility

Questions 6 and 7 on the questionnaire were included to yield some evidence regarding length of residence and mobility patterns. Since both questions are highly related, they are considered together under this heading. A total of 998 respondents indicated that they had lived in their own respective areas for the last five years. This is 84 per cent of the total of 1191 (one respondent was missing from the total of 1192). This indicates that more than eight out of ten of these workers were fairly stable residents of their respective communities. The remaining 193 workers, or 16 per cent, were coded according to the state of their previous residence. Most of the workers in this latter group came from California (25), other sections of Idaho (51), Oregon (10), and Washington (43). A few had migrated long distances to their present jobs, from such states as Florida (2), Georgia (3), New Jersey (1), New York (2), and Rhode Island (1). The responses to questions 10 and 11 (see page 17) also indicate that most of the workers received their education in Idaho, or in states adjacent to Idaho.

Work History

This question (number 8) yielded a wide variety of occupations in which the respondents had engaged. Those given most frequently are:

DOT Title	N*	DOT Title	N*
Saw Operators (various)	79	Material Handler	39
Farm Hand, General I	61	Farmer, Cash Grain	37
Industrial Truck Op.	55	Electrician (any ind.)	30
Grader (woodworking)	55	Tallyman	24
Chainman (sawmill)	47	Logger, All-Round	23
Maintenance Mech. II	47	Fireman, High Pressure	23
Lumber Handler	41		

*Number of Respondents

Perusal of the above data reveals that most of these occupations are found in the lumber industry. This is congruent with the finding presented in relation to question 5 (see above and on the preceding page). The fact that the majority of the workers had worked 5 years or more for their present employer, and had lived in their respective areas 5 years or longer could be expected to result in lumbering jobs as most characteristic of their entire work history. But there are the notable exceptions of Farm Hand, General I and Farmer, Cash Grain. Perhaps this is explained best according to the findings of another study of the State Occupational Research Unit (May, 1966). Analyses of employment trends

over the 15-year period 1950-1964 revealed that agricultural employment in Idaho decreased 28.6 per cent. It seems likely that several of these former agricultural workers found employment in lumbering. Also, lumbering activities and agricultural activities frequently are carried on in adjacent geographical areas, and agricultural workers find it easy and convenient to move into lumbering. Several workers engage in both industries--farm work in the summer and lumbering in the early spring, fall, and winter.

Some additional analyses were made in which the responses to question 8 were compared with those to question 4. We wished to determine, by comparisons between the two DOT codes assigned, how many persons had present jobs (question 4) which also were given as most characteristic of their entire work history (question 8). This count revealed that 686 respondents, or 58 per cent, had identical DOT codes for questions 4 and 8, thus indicating that their present job was also representative of their entire work career. The remaining 506 workers, or 42 per cent, had a work history different from their present job. As already indicated, the most common occupations outside the lumbering industry were in agriculture, but a wide variety of occupations in other fields and industries also was represented. Examples of the latter are: Chemist, Professional Athlete, Typist, Audit Clerk, Inventory Clerk, Salesman, Grocery Checker, Automobile Mechanic, Truck Driver, and Automobile Service Station Attendant. While several workers use lumbering as a "stop gap" to a better--or different--job, these results suggest that a sizeable number make lumbering their career from their very first job.

Years of Education

The respondents were distributed as follows regarding years of education:

Years of Education	N*	Years of Education	N*
4	4	11	87
5	5	12	498
6	8	13	85
7	22	14	64
8	180	15	13
9	87	16	20
10	114		

*Number of Respondents

The figures in the "N" columns total 1187, thus indicating that 5 persons failed to respond to item nine on the questionnaire. The above figures indicate that high school graduates are clearly a majority, with 498, or 42 per cent, having completed 12 years of education. A sizeable 680, or 57 per cent, completed 12 years or more of schooling. This leaves 507, or 43 per cent, with less than 12 years of education. A total of 468, or 39 per cent, had 8 to 12 years of schooling, and only 39, or 3 per cent, were below the 8 year level.

Perhaps our respondents are atypical of lumber workers generally, as the latter may not include so many with 12 or more years of education. Rothney (1958, p. 169) found, in an extensive follow-up study of high school students, that subjects who had higher mental ability test scores and higher class ranks at graduation tended to respond sooner on questionnaires than those with lower scores and ranks. A similar tendency may have been present in our study, with the greatest number responding who had had several years of education. It seems evident, however, that a large percentage of lumbering workers spend many years in school, both prior to and after their entry into the industry. The content of their educational programs during these years should be of real concern to educators.

Location of Schools Attended

Items ten and eleven on the questionnaire are highly related, and will be considered together under this heading. We asked for some detail on the questionnaire regarding the schools attended, with the expectation that we might select a sample of outstanding workers for further study. This would have been accomplished by having officials of the various companies identify from the returned questionnaires a few persons whom they considered to be very desirable or outstanding employees. We then planned to obtain data for these persons from previous school records and any other available sources. The study would not have been too extensive, but we believed such data might give us a few clues regarding the characteristics of good workers in the industry. But our small percentage of returns indicated that this study could not be justified in view of the additional time and effort required.

Since we did not make use of the more detailed data requested in items ten and eleven, we decided to tally the responses to these two items in regard to the states in which the education was received. The last school attended by the majority of the respondents was in the following states: California (25), Idaho (672), Oregon (43), and Washington (173). Graduation from high school was, for the majority, in the following states: California (17), Idaho (410), Oregon (17), and Washington (121). The same four states are represented both for the most recent schooling received and for high school graduation. And, as might be expected, these four states accounted for the majority of previous residences of those workers who had lived in their respective areas less than 5 years (see page 15). These data indicate that a large percentage (probably a majority) of Idaho lumbering workers also have attended Idaho schools. The Idaho school system thus has the opportunity and the responsibility to contribute to the later vocational development of workers in this industry.

Educational Courses Completed and Evaluations

Page two of the questionnaire (see Appendix D, page 39) presents a comprehensive list of 75 school courses. The respondents were requested to indicate those courses actually taken, and from this number to further identify those courses that had helped them most and least,

respectively, in their work with the company. Every single course in the list had been taken by some of the respondents, although numbers varied. Courses in basic arithmetic, reading, spelling, writing, first aid & safety, and English were circled by more than half of the respondents. Courses in jewelry making, stone polishing, artistic metal, mosaics, upholstery, pattern making, and data processing had been taken by less than 1 per cent of the respondents.

The courses which the workers had taken and which they indicated had helped them most included all except seven courses. Zoology, ceramics, jewelry making, mosaics, upholstery, journalism, and geology were not marked by a single worker as being most helpful. The following courses were marked by one hundred or more respondents as giving them the most help in their present work with their company:

Course	Number of Respondents	Course	Number of Respondents
Basic arithmetic	571	Wood shop	192
Reading	390	First aid & safety	184
Writing	308	English	149
Spelling	302	Algebra	139
Hand tool usage	243		

And one hundred or more workers marked the following courses as least helpful:

Course	Number of Respondents	Course	Number of Respondents
Typing	335	Bookkeeping	130
Biology	333	Spelling	125
Algebra	194	Geometry	125
Wood shop	183	Chemistry	123
Natural science	183	Mechanical drawing	108
English	166	Writing	105
Agriculture	144	Driver training	101

Several additional courses were listed in the blanks at the bottom of page two of the questionnaire. Those listed by ten or more workers are: basic and advanced grading, lumber checking, diesel mechanics, aircraft mechanics, art, physical education, history (general), and psychology; of these, basic and advanced grading, lumber checking, and physical education were also marked as most helpful. Several of these latter courses seem logically related to lumbering, but others suggest that the worker may have had another job in mind outside the lumber industry.

Perusal of the above courses reveals a few inconsistencies as well as some notable results. Writing, spelling, wood shop, English, and algebra are present in both lists as being most helpful to some workers and least helpful to others. However, the numbers of respondents for the most helpful group tend to be larger. This perhaps reflects some

differences in work performed, policies of different companies, company size, and other factors. But it also may reflect a wide difference in the content of courses with these titles as well as differences in teaching methods. It is easy to see how a poorly taught ccurse could contribute little, whereas another with the same label, and taught well, could be very helpful. It is important to note that the following courses marked as most helpful by the questionnaire respondents also were among those checked most frequently by the foremen and other supervisory personnel who were interviewed (see page 5):

Basic arithmetic
Reading
Writing
Spelling
Hand tool usage
First aid & safety

Thus, there is some comparability between the responses of both supervisory and production workers. It seems notable that the "tool subjects" of reading, writing, and spelling occur in both lists.

Desired Future Education

Since the respondents may not have had a chance to take certain courses listed on page two of the questionnaire, it seemed appropriate to repeat the same list on page three (see Appendix D, page 40), with directions to mark the courses the respondents would like to take now. The courses marked most frequently are:

Course	Number of Respondents	Course	Number of Respondents
Welding	457	First aid & safety	199
Blueprint reading	361	Auto mechanics	198
Machine shop	330	Carpentry	189
Plant supervision	293	Plumbing & pipefitting	187
Labor-management rela.	288	Algebra	185
Basic electricity	270	Gas engine repair	165
Mechanical drawing	249	Metal shop	164
Pumps & hydraulics	220	Basic arithmetic	159
Electronics	217	Industrial instruments	155
Drafting	214	Trigonometry	151
Electric motor repair	201		

Courses marked by fewer than ten persons are: ceramics, jewelry making, artistic metal, commercial printing, and mosaics. Several additional courses were added in the spaces provided at the bottom of page three of the questionnaire. Those listed most frequently were lumber grading, diesel mechanics, forestry, and public speaking. The latter four courses, indicated as desirable by several respondents, seem logically related to lumbering except for public speaking. The last course might have some implications for lumbering work, but it seems more likely that these persons have some other job in mind outside the industry which they eventually plan to enter.

The relatively small numbers of respondents who marked several of the courses on the preceding page suggests that this group of respondents perhaps was not too eager for additional schooling. As a check on this latter possibility, we made a separate count on page three of the questionnaire to determine the number with no responses, one response, two, etc. A total of 186, or 16 per cent, marked no courses whatsoever. This indicates that the vast majority, or the remaining 84 per cent, desired further education in one or more of the courses listed. The largest concentration was from one through five courses, where there were 457, or 38 per cent, of the cases. Thus, nearly half of the respondents marked more than five of the courses, which seems to indicate a genuine interest in further education. Indeed, a few marked so many courses that, to realize their ambitions, they would need several years of full-time schooling.

The courses listed on the preceding page may be compared with the courses checked by supervisory personnel during the individual interviews (see page 5). Hand tool usage, writing, reading, and spelling were the only courses marked by the foremen which were <u>not</u> also marked by the questionnaire respondents. This might be expected, as these courses are fairly basic, and the workers probably felt that they were already grounded sufficiently in these areas. Those courses marked by 20 or less of the respondents are:

Zoology
Plastics
Leather working
Ceramics
Jewelry making
Stone polishing
Artistic metal
Commercial printing
Mosaics
Wood carving
Journalism
Driver training

All of these courses with the single exception of driver training also received very few checks from the supervisory personnel (see page 6).

RESULTS FROM MAIL QUESTIONNAIRES

Since we had available a roster of most all firms in Idaho employing one or more workers, we decided to supplement our interview data and worker questionnaire data with questionnaire data from firms we could not contact in person. The questionnaire in Appendix E (see pages 41-44) was constructed for this purpose. A total of 481 questionnaires was mailed, and 150, or 31 per cent, were returned. We had only one mailing, which we decided was sufficient for our purposes. We had already experienced the low return percentages of the worker questionnaires, and did not think that follow-up mailings would improve our percentage too much in this phase of the study. The percentage of questionnaires returned (31 per cent) is too small for certain definitive conclusions, but we believe the results have value when compared with other findings in our study. The questionnaire may be divided into five sections which coincide with the four questions on the first page and

the list of courses which are placed on the second page. The results obtained are presented under five separate headings.

Jobs and Numbers of Workers

The first item on the questionnaire asked the employer to list the jobs in his company and the workers in each job. The jobs listed on the returned questionnaires were similar to the contents of Appendix B (see pages 31-33). But since not all of the job titles listed were sufficiently clear to be assigned a DOT code, we did not include a tally of the mail questionnaires in the preparation of Appendix B. Several respondents were engaged in logging, and listed several jobs common to this division of lumbering. We chose not to include a list of logging occupations in this report because the State Occupational Research Unit may complete a study of logging in the future. Logging occupations then will be listed in a report which contains other findings relating to logging operations. The total number of workers listed under this first item on the mail questionnaire was used, along with the responses to the third item, to calculate a percentage of turnover (see under the heading Ratio of Placements to Jobs which begins below on this same page).

Methods of Obtaining New Employees

The second item requested information regarding the methods used to obtain new employees. We thought this would be of interest to new workers who wish to enter the industry, and to vocational counselors and educators who work with youth. Forty-seven respondents, or 31 per cent, failed to answer this item. Those responding frequently listed more than one method, and we made our tallies according to the different methods listed, rather than according to the number of respondents. The 103 employers who responded to this item listed a total of 204 methods for obtaining new workers. Eighty-seven of the total of 204, or 43 per cent, involved direct hiring at the plant. Another method, listed 48 times, or 24 per cent, was to call the State Employment Service. The remaining methods, none of which constituted more than 5 per cent, could be divided into personal contacts or contacts with schools and other organizations.

Ratio of Placements to Jobs

Item three requested information regarding the number of new workers hired each year. This information was needed to make a rough estimate of the number of openings which might be expected in the lumber industry during any given year. The figure given in item three was placed over total jobs as given in item one (see discussion above), and a percentage ratio was calculated. Since percentages vary too much with small figures, we calculated percentages for those companies with twenty or more employees. This limitation, plus the fact that 57 companies did not reply to this question, limited the percentage calculations to 35 companies.

A wide range of percentages was obtained, ranging from 0 per cent to 152 per cent. The median was about 22 per cent. We made some

independent comparisons of these figures with similar data obtained from the companies we visited personally. We found that a percentage of new hires over total employees typically ranges from 10 to 15 per cent, even when summer seasonal employees are excluded. We obtained figures for one large company over a period of six years, which revealed an annual turnover rate of slightly over 10 per cent for the six-year period.

As we have indicated previously in Part I of our study of lumbering in Idaho, employment in this industry is expected to hold fairly steady or to decrease slightly in the future. This indicates that relatively few openings will result from expansions, although this will occur in certain areas as individual employers expand their operations and/or facilities. But the data presented above indicate that several openings will occur annually in the industry as workers leave for other jobs or as they change from one employer to another within the industry. For example, annual average employment in lumbering in Idaho for 1964 was about 12,900. The above percentages relating to new hires indicate that some 1300 to 2000 openings occur each year for which job applicants may compete. And during the summer season, there usually is an additional demand for skilled and experienced workers. Each season, needs develop for power sawyers, tractor operators, jammer operators, etc. in logging, and in the mills openings develop for such jobs as head sawyer, edger man, grader, and maintenance mechanic.

Five-Year Employment Projections

Item four requested information regarding anticipated employment five years hence. Fifty-five respondents did not reply to this question. Three reported that they planned to liquidate their business in the near future. The remaining 92 respondents were distributed as follows:

Increase:	26
Remain the Same:	61
Decrease:	5

Compared with the responses of the foremen and other supervisory personnel we interviewed (see pages 6 and 7), more of these companies reported that they expected employment to remain about the same. And more of the mail respondents were less likely to report an expected decrease. However, since the mail respondents represent a reduced number within their total, the comparisons must be interpreted cautiously.

Desirable Background Courses

The second page of the mail questionnaire (see Appendix E, page 44 contained the same list of courses used in the worker questionnaire and in interviews with foremen and other supervisory personnel. We asked the respondents to mark those courses that they considered desirable background for a worker to perform his present job with their company and to move ahead in the lumber industry. Forty-three, or 29 per cent, of the 150 respondents did not mark any courses; the remaining 107, or

71 per cent, marked one or more courses, the most common of which were:

Course	Number of Respondents	Course	Number of Respondents
Hand tool usage	88	Pumps & hydraulics	53
Welding	83	Basic electricity	44
Basic arithmetic	78	Labor-management rela.	43
Gas engine repair	62	Hoists & pulleys	43
First aid & safety	61	Reading	43
Machine shop	60	Spelling	41
Auto mechanics	57	Writing	40

Fewer than five checked the following:

Biology
Zoology
Chemistry
Leather working
Ceramics
Jewelry making
Stone polishing
Artistic metal
Commercial printing
Mosaics
Radio & TV repair
Agriculture
Journalism
Photography
Refrigeration & air conditioning
Table reading
Pattern making
Geology
Foreign languages
Bricklaying & stone masonry

Comparisons of the above courses with those reported for foremen and other supervisory personnel (see pages 5-7) and for employed workers (see pages 17-20) reveal that several courses seem to be consistently identified as desirable, whereas others are seldom so identified.

VOCATIONAL COURSES IN THE LUMBER INDUSTRY

Thus far in our report we have presented results from interviews and questionnaires. The picture would be incomplete, however, without a presentation of the program of vocational education which has been conducted for several years in the lumber industry. Mr. Sam Glenn, Director, State Board for Vocational Education, supplied (personal communication dated February 2, 1966) us with a list of courses in Idaho covering a five-year period for the lumber industry. These data are presented in Table I on the page following.

Examination of the contents of Table I reveals, first, that several of the courses were attended by workers from other industries. It was not possible to identify specifically the lumber workers, and the exact number of trainees from lumbering thus is not available. It is evident, however, that vocational courses have not been attended by very many lumbering workers. If the total of 413 persons for the 1964-1965 period represented lumber workers only, this would amount to only 3.2 per cent of the annual average of 12,900 persons employed in lumbering during 1964. Vocational training, if it is to be made available to increasing numbers of lumber workers, will need to be expanded both in the public

TABLE I

VOCATIONAL COURSES ATTENDED BY LUMBER WORKERS 1960-1965

Course Titles	Numbers Enrolled Each Year				
	60-61	61-62	62-63	63-64	64-65
*Blueprint Reading for Maintenance Workers	8	17	65	39	36
Conference Leading	0	0	0	8	0
Cut-Off Saw Operation	0	10	8	12	0
*Electronics for Maintenance Workers	0	31	19	0	55
*First Aid for Supervisors	0	0	0	0	21
Fundamentals of Wood Lamination	0	0	9	0	0
General Job Instruction	0	0	59	0	0
*Instrumentation for Maintenance Workers	0	9	9	0	0
Knife Grinding and Pattern Making	0	0	0	17	0
Log Scaling	23	17	17	0	0
Lumber Grading (several types)	85	82	59	149	119
Lumber Scaling, Checking, and Tallying	29	34	36	17	12
*Mathematics for Maintenance Workers	36	22	94	44	51
Millwright Apprentice Training	0	0	10	0	0
Moulder Set-Up	0	0	0	16	0
Planer Set-Up	18	0	43	10	9
*Principles of Surveying	0	0	0	0	11
Production Control	0	11	0	0	0
*Safety Training for Supervisors	0	0	0	0	42
Sawmill Transportation	20	0	0	0	0
Techniques of Supervising People	66	0	0	31	30
*Welding for Maintenance Workers	25	10	25	28	27
Totals	310	243	453	371	413

*Numbers enrolled also include workers from other industries.

schools and in the adult education program.

Further examination of the contents of Table I reveals two additional characteristics of the vocational courses presented that should be emphasized. First, several of the courses relate specifically to lumbering, such as wood lamination; job instruction; knife grinding and pattern making; log scaling; lumber grading; lumber scaling, checking, and tallying; sawmill transportation; and various types of machine set-up and operation. Such courses, specific to the industry, probably should be taught mainly, if not exclusively, in the adult vocational program. Second, it also is evident that several courses such as blueprint reading, conference leading, electronics, first aid, instrumentation, mathematics, surveying, production control, safety training, techniques of supervision, and welding are applicable in industries other than lumbering, and thus might be taught in the public schools as part of an "industrial cluster" of skills applicable to a wide variety of occupations and industries.

GENERAL DISCUSSION AND CONCLUSIONS

This Part III of the study of lumbering, plus the preceding Parts I and II published by the State Occupational Research Unit represent, in a general way, our conception of how studies of the labor force should be conducted. The overall study design, simple to state but involving considerable time and effort in its execution, may be stated as follows:

1. The general nature, background, and future trends of the industry should be investigated and the results set forth in terms of employment projections, changes in work tasks, and emerging and declining processes and work activities.

2. The sociological, psychological, and related characteristics of the workers in the industry should be determined and presented in a form which is useful to vocational counselors and educators.

3. The kinds of educational courses and experiences appropriate for preparing workers to enter, or advance in, the industry should be identified and/or developed.

It is evident that the above design would apply equally well to individual occupations and occupational clusters, as well as industries. At the risk of waxing somewhat apologetic, we would say that our study of the lumber industry is a good first approximation of what a study should look like following the above study design. Parts I and II already have been published and need little further discussion. The results of Part III are the subject of the remainder of this concluding section.

An examination of those courses checked most frequently in all phases of this study indicates that the following would be appropriate for lumbering work:

Basic arithmetic
First aid & safety
Hand tool usage
Welding
Labor-management relations
Writing
Basic electricity
Blueprint reading
Plant supervision
Reading
Spelling
Machine shop
Pumps & hydraulics
Gas & diesel engine repair

Courses specific to the industry, such as grading, checking, and various types of machine set-up and operation also might be added to the list. The pattern of courses listed here seems significant. Several are related to the mastery of rather specific skills (such as welding), others reflect more general education (such as reading), and still others (such as labor-management relations) reflect the importance of the interpersonal situation. It seems that a general education as well as specific vocational courses can make a contribution to the future success of the lumber worker.

Some additional independent support may be found regarding the value of the above listed courses, although the reader may not agree in all cases with the relationships suggested. Referring to Part II of the lumber study, a significant correlation (Pearson r = .31) was obtained between Numerical Aptitude and Work Efficiency Ratings of workers in the Clearwater Unit of Potlatch Forests, Inc., Lewiston, Idaho. Basic arithmetic occurs in the above list. Furthermore, the Personnel Reaction Blank, designed to measure the "dependability-conscientiousness" personality factor yielded a significant correlation (Pearson r = -.33) with Work Efficiency Ratings. It seems that there is some relationship between the factor this personality inventory purports to measure and the type of behavior expected as an outcome of such courses as first aid & safety, labor-management relations, and plant supervision. Finally, the correlation between Education and Work Efficiency Ratings (Pearson r = .34) might be assumed to relate to the tool subjects of Reading, Writing, and Spelling.

The following courses apparently have little to contribute to lumbering workers as a group:

Biology
Zoology
Natural science
Leather working
Ceramics
Jewelry making
Stone polishing
Artistic metal
Commercial printing
Mosaics
Radio & TV repair
Agriculture
Journalism
Photography
Pattern making
Geology
Foreign languages
Chemistry

Except for a few minor instances, such as chemistry relating to certain jobs in paper testing, these courses have little logical relation to jobs in the lumber industry.

At this point it seems appropriate to discuss the implications of the above course titles which were indicated as desirable preparation for lumber work. It was never our purpose at any point in this study to suggest, or devise, a specific curriculum for the lumber industry. Common course titles were selected because it was assumed that these would be more meaningful to the persons we interviewed and those who completed our questionnaires. Anyone interested in curriculum construction or the preparation of specific courses would need to make more intensive studies of the work tasks involved in lumbering jobs. Job analyses, or functional analyses of different phases of the work, are two possible methods which might be used for this purpose.

The results of this study are best interpreted in relation to a "cluster concept" of vocational education. Contacts with other Idaho industries suggest that several vocational skills could be identified which would be applicable to a wide variety of occupations. For example, welding of one form or another would be applicable to several jobs within the following industries in addition to lumbering:

Mining	Steel fabrication
Potato processing	Automotive repair
Phosphate manufacturing	Atomic enery installation and maintenance
Construction	
Rail and truck transportation	Public utilities

Other skills also could be identified as basic to these and other industries.

One of the main reasons we selected lumbering for study was to determine if workers in this industry, traditionally assumed to require little beyond sheer physical ability, could benefit from a vocational education program. We believe we have demonstrated that a program of vocational education designed to prepare students for a wide variety of jobs should include skills basic to lumbering as well as other industries. Whether such training should be given in the junior or senior high schools, technical high schools, comprehensive high schools, area vocational schools, etc., and whether it should be called vocational education, industrial arts, pre-vocational training, etc. we will leave to the discretion of the vocational educators.

Those familiar with lumbering and other industries realize that several workers with little formal education have mastered relatively complex vocational skills. We have found, however, that many of these same workers will admit that they acquired their skills the "hard way," and that formal training would be the preferred method. Perhaps the majority of workers in the Idaho labor force have not received formal vocational training to the extent that would be desirable to prepare them for their present jobs. But this is a situation which should be improved rather than one to be expected and accepted as "normal." Another characteristic of jobs in many industries is their routine nature and relative lack of any special skill requirements. But we only need to be reminded that we should prepare students for <u>careers</u> rather

than specific jobs. It is unlikely that very many workers will remain for long in any given job. Therefore, they should receive training that enables them to take advantage of advancement opportunities, and adapt to the inevitable changes which will occur during their working life.

This study of lumbering has been conducted and the results presented with the hope that the general design, as well as the specific content, will make some contribution to the program of vocational education in Idaho. We should emphasize again that, rather than advocating a school program to educate lumber workers per se, we have tried to demonstrate that the needs of this industry should be recognized and reflected in the general vocational education program. If future lumber workers cannot share in the benefits of vocational education, the educational system is to that extent failing to meet the needs of a significant number of students in Idaho schools.

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APPENDIX A

PAPER AND ALLIED PRODUCTS OCCUPATIONS

DOT Title & Code	# Employed	DOT Page #
Back Tender, Insulation Board 532.885	4	35
Back Tender, Paper Machine 534.782	8	35
Beater Engineer 530.782	8	48
Black-Ash-Burner Operator 553.782	12	56
Bleacher Man, Pulp 533.782	16	57
Car Cooper 910.887	8	99
Carpenter, Maintenance 860.281	17	101
Causticiser 558.782	4	110
Chip-Bin Man 922.885	8	126
Chip Unloader 922.883	12	126
Combiner Operator 534.782	12	150
Core-Cutter and Reamer 649.885	16	168
Cutter Operator (any ind.) 699.782	13	186
Digester Operator (paper & pulp) 532.782	8	203
Digester-Operator Helper 532.886	4	203
Electrician (any ind.) 824.281	25	240
Evaporator Operator (paper & pulp) 532.885	4	257
Fireman, High Pressure 951.885	12	280
Fourdrinier-Machine Tender 539.782	8	313
Industrial-Truck Operator 922.883	33	374
Inspector (paper & pulp) 649.487	3	378
Instrument Repairman I 710.281	10	388
Laboratory-Sample Carrier 922.887	10	403
Laboratory Tester I 029.181	14	403
Layboy Tender 649.885	4	415
Lime-Kiln Operator (paper & pulp) 559.885	4	423
Machinist I 600.280	8	438
Maintenance Mechanic (any ind.) II 638.281	17	442
Material Handler 929.887	87	457
Millwright 638.281	27	471
Mixing-Machine Operator (any ind.) 550.885	13	475
Oiler I 699.887	10	497
Packager, Hand 920.887	8	507
Painter (const.) 840.781	11	509
Pipefitter I 862.381	17	534
Porter II 381.887	5	549

APPENDIX A (CONT'D)

DOT Title & Code		# Employed	DOT Page #
Power-Plant Operator I 952.782		8	554
Power-Shovel Operator 850.883		2	554
Pulper 530.885		4	573
Quality-Control Technician (profess. & kin.)	019.281	4	579
Recovery Operator (paper & pulp) 552.380		4	587
Screen Tender 533.885		4	631
Screen-Tender Helper 533.887		4	631
Shipping Checker (clerical) 222.687		4	653
Stenciler (any ind.) 920.887		12	692
Stock Clerk 223.387		22	696
Truck Driver, Heavy 905.883		3	759
Truck Driver, Light 906.883		7	759
Washer Engineer 533.885		8	780
Weigher (clerical) I 224.587		11	788
Welder, Combination 812.884		21	790
Winder-Man Helper 539.885		24	796
Winder Man, Paper Machine 640.782		24	796

Total Number = 646

APPENDIX B

LUMBERING OCCUPATIONS

DOT Title & Code	# Employed	DOT Page #
Automobile Mechanic 620.281	10	32
Blacksmith 610.381	3	56
Blacksmith Apprentice 610.381	1	56
Block Setter 667.885	2	60
Boomboat Operator 911.883	10	484
Boom Man 941.684	2	67
Bulldozer Operator I 850.883	14	83
Car Cooper 910.887	16	99
Carpenter 860.381	18	101
Carpenter, Apprentice 860.381	5	101
Chainman (sawmill) 669.886	140	116
Chipperman 668.885	27	126
Cut-Off-Saw Operator 667.782	31	184
Cut-Off Sawyer, Log 667.885	3	184
Deckman (sawmill) 667.887	16	190
Drop-Sorter Operator 667.887	11	226
Edger Man I 667.782	57	234
Electric-Bridge-Or-Gantry-Crane Operator 921.883	13	239
Electrician (any ind.) 824.281	34	240
Electrician Apprentice 824.281	9	240
Electric-Monorail-Crain Operator 921.883	6	242
Fireman, High Pressure 951.885	38	280
Fuel-House Man 951.886	21	317
Furnace Cleaner 891.887	5	319
Gang Sawyer 667.782	3	323
Glueman 762.887	3	336
Gluing-Machine Operator 563.885	17	336
Grader (woodworking) 669.587	157	338
Guard I 372.868	5	346
Head Sawyer 667.782	47	354
Hoisting Engineer 921.883	4	361
Industrial-Truck Operator 922.883	87	374
Kiln Operator (woodworking) 563.381	20	399
Kiln-Transfer Operator 569.883	24	399
Knife Grinder 601.782	13	400
Laboratory Tester I 029.181	1	403

APPENDIX B (CONT'D)

DOT Title & Code	# Employed	DOT Page #
Laborer, Hoisting 892.883	4	407
Logging-Tractor Operator 929.883	4	749
Log Scaler 941.488	18	432
Lumber Handler 922.887	147	434
Lumber Straightener 669.887	33	434
Machine Set-up Man (woodworking) 669.280	47	437
Machinist I 600.280	22	438
Machinist Apprentice 600.280	6	438
Maintenance Mechanic (any ind.) II 638.281	41	442
Material Handler 929.887	182	457
Millwright 638.281	77	471
Mixing-Machine Operator (any ind.) 550.885	1	475
Oiler I 699.887	41	497
Order Clerk II 249.368	87	501
Packager, Hand 920.887	21	507
Packager, Machine 920.885	22	507
Painter 840.781	5	509
Pile-Driver Operator 859.782	1	532
Pipefitter I 862.381	16	534
Pondman (sawmill) 921.886	68	548
Porter II 381.887	87	549
Power-Barker Operator 533.782	15	551
Power-Plant Operator I 952.782	13	554
Power-Shovel Operator 850.883	17	554
Press Operator, Heavy Duty 617.280	1	559
Presto-Log Operator 569.885	10	560
Resaw Operator 667.782	27	594
Ripsaw Operator 667.782	28	600
Safety Inspector (any ind.) I 168.284	1	614
Sander, Machine 761.884	2	625
Saw Filer 701.381	49	627
Sawmill Worker 667.782	5	627
Slasher Operator 667.885	45	664
Sorter (woodworking) 922.887	183	673
Sorter Operator 922.487	18	673
Stacker, Machine 569.885	65	684
Stickerman 949.886	33	694
Stock Clerk 223.387	2	696
Straddle-Truck Operator 922.883	68	700
Tallyman 223.588	53	721

APPENDIX B (CONT'D)

DOT Title & Code	# Employed	DOT Page #
Tenoner Operator (woodworking) 669.782	3	731
Trimmer Helper 667.886	16	757
Trimmerman 667.782	63	757
Truck-Crane Operator 921.883	4	759
Truck Driver, Heavy 905.883	2	759
Truck Driver, Light 906.883	16	759
Tube Cleaner (any ind.) 891.887	2	760
Watchman I 372.868	27	783
Welder, Combination 812.884	14	790
Woodworking-Machine Feeder 669.886	60	802
Woodworking-Machine Operator 669.782	73	802

Total Number = 2718

APPENDIX C

VENEER AND PLYWOOD OCCUPATIONS

DOT Title & Code	# Employed	DOT Page #
Apron Man 669.885	4	18
Chainman (sawmill) 669.886	50	116
Chipperman 668.885	6	126
Core Layer, Plywood 762.887	32	169
Core-Laying-Machine Operator 669.885	24	169
Cut-Off Sawyer, Log 667.885	6	184
Cutter, Machine II 699.885	1	185
Deckman (sawmill) 667.887	6	190
Edger Man I 667.782	1	234
Electrician (any ind.) 824.281	4	240
Fireman, High Pressure 951.885	10	280
Glue Spreader, Veneer 569.885	2	336
Grader (woodworking) 669.587	44	338
Hot-Plate-Plywood-Press Operator 563.885	10	366
Industrial-Truck Operator 922.883	44	374
Kiln Operator (woodworking) 563.381	1	399
Knife Grinder 601.782	6	400
Logging-Tractor Operator 929.883	8	749
Log Scaler 941.488	11	432
Lumber Straightener 669.887	1	434
Material Handler 929.887	61	457
Millwright 638.281	9	471
Mixing-Machine Operator (any ind.) 550.885	6	475
Order Clerk II 249.368	2	501
Pipefitter I 862.381	1	534
Plywood Patcher, Hand 761.884	2	544
Pondman (sawmill) 921.886	3	548
Porter II 381.887	11	549
Power-Barker Operator 533.782	4	553
Power-Shovel Operator 850.883	2	554
Press Operator, Heavy Duty 617.280	9	559
Sander, Machine 761.884	6	625
Sorter (woodworking) 922.887	21	673
Stacker, Machine 569.885	1	684
Stenciler (any ind.) 920.887	1	692
Stickerman 949.886	1	694
Variety-Saw Operator 667.782	4	772
Veneer Clipper 663.885	21	773
Veneer Drier 563.885	36	774
Veneer Jointer 665.782	9	774

APPENDIX C (CONT'D)

DOT Title & Code	# Employed	DOT Page #
Veneer-Jointer Helper 667.886	4	774
Veneer-Lathe Operator 663.782	7	774
Veneer Repairer, Machine 669.885	9	774
Veneer-Slicing-Machine Operator 663.782	1	774
Welder, Combination 812.884	1	790
Woodworking-Machine Feeder 669.886	2	802
Woodworking-Machine Operator 669.782	2	802

Total Number = 507

APPENDIX D

LUMBER AND PAPER INDUSTRY QUESTIONNAIRE
(Individual Worker Form)

The next four pages present a cover letter and the three-page questionnaire which were distributed to more than 3,000 production workers in the lumber industry. A total of 1192 questionnaires was returned. During the study, the cover letter was reproduced on letterhead stationery of the College of Education and bore the signature of the Director of the State Occupational Research Unit. A copy of the questionnaire then was attached to the letter and the four-page assembly was distributed to the individual workers. See pages 9-20 of this report for a presentation of the results obtained with this instrument.

Dear Employee:

We need your cooperation and assistance in a study being conducted by the State Occupational Research Unit at the University of Idaho in Moscow. We wish to determine what kinds of school courses might help workers to perform their present jobs and to move ahead with the company.

You can give us the information we need by completing the attached questionnaire. Your answers will be treated confidentially. We have tried to limit our questions to the information we really need, and have not included questions regarding your personal affairs. There are three pages in the questionnaire. Please read all questions carefully and answer each one the best you can.

The information from the questionnaire will enable us to suggest courses of study to educators in our Idaho high schools and junior colleges which might help students better prepare for the world of work. For example, many boys now in high school may be encouraged to take vocational courses which will help them be better workers and progress more rapidly if they choose to enter the lumber industry (or paper industry) after they finish school. More important for yourself, your answers may help us organize courses here at the plant or in this general area which would enable you to further your own education.

Please complete the questionnaire within a day or two at the latest and return it, along with this letter, to your department supervisor.

Sincerely,

K. M. Loudermilk, Director
State Occupational Research and
Development Coordinating Unit
Administration Building, 201-B

KML:cn

Do Not Write In This Space

LUMBER AND PAPER INDUSTRY QUESTIONNAIRE

1. Name _____
(Last) (First) (Middle)

2. Department or Division of the plant _____

3. Present age (years) _____

4. Give the name of your present job, and describe briefly what you do _____

5. How long have you worked for this company? (give your answer in months and years) _____

6. Have you lived in this area for the last five years? (within driving distance of the company)? Circle one: Yes No

7. If you circled "No" in the previous question, give the city and state where you lived before coming here. (Note: list more than one city and state, if necessary, to account for at least one year before the date you moved here) _____

8. Regarding your entire work history, what <u>one</u> kind of work have you done the most? Include summer work while attending school, part-time, military, and temporary jobs. List the name of the job and give a brief description of the work performed. (Note: if you have worked at many different jobs, pick the <u>one</u> job in which you spent the most time) _____

9. Circle the highest grade in school you completed:

Grade School								High School				College or Trade School			
1	2	3	4	5	6	7	8	1	2	3	4	1	2	3	4

10. Give the name of the last school you attended, either full time or part time _____
Address of the school (city and state) _____
Give the month and year you left _____

11. If you graduated from high school, give the name of the school. (Note: if the answer here is the same as number 10 above, just write "same") _____
City and state of the high school _____
Give the year you graduated _____

LUMBER AND PAPER INDUSTRY QUESTIONNAIRE (cont'd)

The list below contains many school subjects, or parts of subjects, taught in high schools, trade schools, correspondence courses, etc. Circle the number in front of those you actually have taken, including any courses you are taking at the present time. Include any courses taken in military service and in night school. (Note: circle several, if necessary, if they were a part of a single course. For example, you may have studied welding in a course in vocational agriculture. In this case you would circle numbers 32 and 48 in front of both welding and agriculture.)

1. Hand tool usage (axe, saw, wrenches, etc.)
2. Basic arithmetic (add, subtract, multiply, & divide)
3. Mechanical drawing
4. Drafting
5. Reading
6. Spelling
7. Writing
8. Physics
9. Biology
10. Zoology
11. Botany
12. Natural science
13. Chemistry
14. Algebra
15. Trigonometry
16. Calculus
17. Auto mechanics
18. Basic electricity
19. Electronics
20. Machine shop
21. Wood shop
22. Metal shop
23. Plastics
24. Leather working
25. Ceramics
26. Jewelry making
27. Stone polishing (lapidary)
28. Artistic metal
29. Commercial printing
30. Mosaics
31. Blueprint reading
32. Welding
33. Sheet metal
34. Cabinet making
35. Carpentry
36. Wood finishing
37. Upholstery
38. Furniture making
39. Gas engine repair
40. Pumps and hydraulics
41. Hoists and pulleys
42. Wood carving
43. Radio & TV repair
44. Bookkeeping
45. Shorthand
46. Typing
47. Farm equipment repair
48. Agriculture
49. Journalism
50. Photography
51. Plumbing & pipefitting
52. Refrigeration & air conditioning
53. Graph reading
54. Table reading
55. Pattern making
56. Geology
57. Driver training
58. Geometry
59. Distributive (sales) education
60. Economics
61. Electric motor repair
62. Office practice
63. Foreign languages
64. Accounting
65. Auto body-tender
66. Data processing
67. Electrical appliance repair
68. First aid & safety
69. Labor-management relations
70. Plant supervision
71. English
72. Bricklaying & stone masonry
73. Forging & foundry (blacksmithing)
74. Industrial instruments
75. Business law

Others:
76. _____
77. _____
78. _____
79. _____
80. _____

Now look over those you circled above and select those subjects that you think have helped you the <u>most</u> in your work with this company. List their numbers here: _____

Look over those you circled again and select those subjects that you think have helped you the <u>least</u> in your work with this company. List their numbers here: _____

LUMBER AND PAPER INDUSTRY QUESTIONNAIRE (cont'd)

The list of subjects below is identical to the one that you just finished on the previous page. This time, circle the number in front of those you would <u>like</u> to have taken while in school, or would <u>like</u> to take <u>now</u>, that you think would help you in your present work and would help you move ahead with this company. (Note: if you circled some of these subjects on the previous page, but would like to take them again for review, or on a more advanced level, circle them again here)

1. Hand too usage (axe, saw, wrenches, etc.)
2. Basic arithmetic (add, subtract, multiply, & divide)
3. Mechanical drawing
4. Drafting
5. Reading
6. Spelling
7. Writing
8. Physics
9. Biology
10. Zoology
11. Botany
12. Natural science
13. Chemistry
14. Algebra
15. Trigonometry
16. Calculus
17. Auto mechanics
18. Basic electricity
19. Electronics
20. Machine shop
21. Wood shop
22. Metal shop
23. Plastics
24. Leather working
25. Ceramics
26. Jewelry making
27. Stone polishing (lapidary)
28. Artistic metal
29. Commercial printing
30. Mosaics
31. Blueprint reading
32. Welding
33. Sheet metal
34. Cabinet making
35. Carpentry
36. Wood finishing
37. Upholstery
38. Furniture making
39. Gas engine repair
40. Pumps & hydraulics
41. Hoists and pulleys
42. Wood carving
43. Radio & TV repair
44. Bookkeeping
45. Shorthand
46. Typing
47. Farm equip. repair
48. Agriculture
49. Journalism
50. Photography
51. Plumbing & pipefitting
52. Refrigeration & air conditioning
53. Graph reading
54. Table reading
55. Pattern making
56. Geology
57. Driver training
58. Geometry
59. Distributive (sales) educ.
60. Economics
61. Electric motor repair
62. Office practice
63. Foreign languages
64. Accounting
65. Auto body-fender
66. Data processing
67. Electrical appliance repair
68. First aid, safety
69. Labor-management relations
70. Plant supervision
71. English
72. Bricklaying & stone masonry
73. Forging & foundry (blacksmithing)
74. Industrial instruments
75. Business law

Others:
76. _____
77. _____
78. _____
79. _____
80. _____

APPENDIX E

LUMBER INDUSTRY QUESTIONNAIRE
(Mail Form)

The next three pages present a cover letter and the two-page questionnaire which were mailed to 481 lumber companies in Idaho. A total of 150 questionnaires was returned. The cover letter was reproduced on letterhead stationery of the College of Education and bore the signature of the Director of the State Occupational Research Unit. The questionnaire then was attached to the letter and the three-page assembly was mailed to each company with a stamped, self-addressed return envelope. See pages 20-23 of this report for a presentation of the results obtained with this instrument.

Dear Sirs:

We need your cooperation and assistance in a study we are conducting of the lumber industry in North Idaho. Our primary purpose is to see if there are educational experiences which would benefit a worker just entering lumbering and also those who are presently employed.

It is obvious that many jobs in the lumber industry require no formal education whatsoever. But it has been our experience so far in our study that, given two men who are equally dependable and physically able, the one is preferred who has had some vocational courses which enable him to better understand the work operations in lumbering. We would like your opinion on this matter, plus a few additional facts regarding your company's operation. Your answers will enable us to make important recommendations to high schools and junior colleges which offer vocational programs. More important, it may be possible to organize special evening courses which could be taken by some of your present employees.

The information we need is specified on the attached two-page questionnaire. The first three questions are fairly routine, and should be easy to answer from company records. Question IV should be answered by someone who knows the company's operation and its future prospects. The second page of the questionnaire presents a wide variety of school courses, some of which might be considered desirable for lumber workers. This second page also should be completed by someone familiar with the entire operation of your company.

Please complete the questionnaire and return it to us at your earliest convenience. A stamped, self-addressed envelope is enclosed. Thanking you in advance, I am,

Sincerely,

Kenneth M. Loudermilk, Director
State Occupational Research and
Development Coordinating Unit
Administration Bldg., 201-B

KML:cn
Incl.

LUMBER INDUSTRY QUESTIONNAIRE

I. List the jobs in your company and the number of workers in each job. An example would be: band head sawyer, 2; edgerman, 4; grader, 1; etc. (Use the back of this sheet, if necessary.)

II. How do you obtain new workers--for example, do you advertise in any way, call the state employment service, are workers hired directly as they apply to your company, etc.?

III. Give the number of new workers you hire each year, not counting those that are called back after layoffs.

IV. Do you expect to employ more people in the next five years, will your work force by smaller, or about the same as now? (If either an increase or decrease is expected, estimate the number of workers.)

LUMBER INDUSTRY QUESTIONNAIRE--CONT'D

The list below contains many school subjects, or parts of subjects, taught in high schools, trade schools, correspondence courses, military training, etc. We wish to know if you think any of the courses listed (or any others you may wish to add) would be desirable background for a worker to perform his present job with your company and to move ahead in the lumber industry. Please read over the entire list carefully, and circle the number in front of each course that you think would benefit your employees. If you wish, you may add some comments at the bottom of the page.

1. Hand tool usage (axe, saw, wrenches, etc.)
2. Basic arithmetic (add, subtract, multiply & divide)
3. Mechanical drawing
4. Drafting
5. Reading
6. Spelling
7. Writing
8. Physics
9. Biology
10. Zoology
11. Botany
12. Natural science
13. Chemistry
14. Algebra
15. Trigonometry
16. Calculus
17. Auto mechanics
18. Basic electricity
19. Electronics
20. Machine shop
21. Wood shop
22. Metal shop
23. Plastics
24. Leather working
25. Ceramics
26. Jewelry making
27. Stone polishing (lapidary)
28. Artistic metal
29. Commercial printing
30. Mosaics
31. Blueprint reading
32. Welding
33. Sheet metal
34. Cabinet making
35. Carpentry
36. Wood finishing
37. Upholstery
38. Furniture making
39. Gas engine repair
40. Pumps and hydraulics
41. Hoists and pulleys
42. Wood carving
43. Radio & TV repair
44. Bookkeeping
45. Shorthand
46. Typing
47. Farm equipment repair
48. Agriculture
49. Journalism
50. Photography
51. Plumbing & pipefitting
52. Refrigeration & air conditioning
53. Graph reading
54. Table reading
55. Pattern making
56. Geology
57. Driver training
58. Geometry
59. Distributive (sales) education
60. Economics
61. Electric motor repair
62. Office practice
63. Foreign languages
64. Accounting
65. Auto body-fender
66. Data processing
67. Electrical appliance repair
68. First aid & safety
69. Labor-management relations
70. Plant supervision
71. English
72. Bricklaying & stone masonry
73. Forging and foundry (blacksmithing)
74. Industrial instruments
75. Business law

OTHERS: 76._____
77._____
78._____
79._____
80._____

Commehts:_____