AN IN-SERVICE TRAINING PROGRAM FOR
THE STATE FORESTRY DEPARTMENT

by

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A THESIS

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AN IN-SERVICE TRAINING PROGRAM FOR
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INTRODUCTION

The objective of this paper is to assist in increasing the fire protection efficiency of the State Forestry Department and the private protective association under the Department's supervision with a proposed plan for an in-service training program for the regular short-term personnel. The aim is not to justify or condemn the practice and ideals of the present state-wide protective organization's training program, but to analyze the needs and to propose a plan to improve it.

In the preparation of this thesis, the author makes no claim for completeness or originality other than the conclusions and recommendations made in Chapter VI. In presenting this study, the material has been organized into six parts or chapters.

Chapter I, "The Presentation of the Problem", gives the history of Oregon's forest fire protection, the present fire protection organization, the training problems, and the United States Army system of training and its adaptation for modified use in protection training. It is the author's belief that in order for the reader to visualize the problem of in-service training in the State Forestry Department, it
is necessary for him to have an insight into the forest fire protection problems of the State of Oregon. For this reason the material as presented in Chapter I should prove of value to the reader.

Chapter II, "Suggestions for Selecting What To Teach", presents a procedure for making this selection on the same basis as that used by the United States Army. Three steps were recommended for preparing material which could be used as a basis for selecting what to teach. Sample lists were then provided to illustrate the recommended steps and the material needed.

Chapter III, "Suggestions for Determining Who Should Be Taught", proposes two plans for selecting men for instruction. The first plan is on a basis of increasing the efficiency of the men assigned to a particular position. The second plan is on a basis of training men for promotion.

Chapter IV, "Suggestions on How To Teach", presents the types of training, the various methods of training, sample lesson plans to illustrate each method and suggestions for the application of these various types and methods. This material was prepared in such form that the District Wardens who are conducting the training may select the systems or methods best suited to their needs.

Chapter V, "Suggested Methods for Measuring Training Accomplishments", proposed the use of the test situations or
problems, inspections and written examination as usable methods for practical application. This material was prepared for actual field application and it is hoped it may be adjusted or varied to meet given situations.

Chapter VI, "Conclusion and Recommendations", suggests a plan for introducing the training program to the District Wardens. This to be followed by assistance in the field by the personnel training officer employed out of the State Forester's Office.
CHAPTER I
THE PRESENTATION OF THE PROBLEM

HISTORY OF OREGON'S FOREST PROTECTION

The present protective system for Oregon's timber is the result of thirty-seven years of cooperative effort between individuals, private timber companies, the State of Oregon, and the Federal Government.

The first evidence, in our Oregon legislature, that the people realized the possible losses from fire is contained in a law passed by the legislature in 1863 making it unlawful to set fire to "prairie or other land." (13)

There was little accomplished in forest protection for many years after 1863 and during that period Oregon had many disastrous fires such as the Yaquina, Coos Bay, and Nestucca burns covering more than a million acres of forest land. (13)

About 1902, a few private timber owners spent some money in Coos and Klamath counties to protect their holdings from fire, but it was not until the period between 1907 and 1911 that the private timber owners consolidated their intermingled holdings together for the purpose of mutual protection to form the first protective association in the state. (13)
In 1907, enough sentiment had arisen to cause the creation of a state board of forestry, the activity of which was very limited because $250 for the biennial period was all that was appropriated. This appropriation was used to pay for a few supplies and a part-time stenographer. The work of the board consisted of issuing voluntary fire wardens commissions, press releases, and the publication of a biennial report. Then, in 1911, the state legislature created the present state board of forestry, enacted a progressive forest code and appropriated $60,000 to carry out the work for the biennium. (13)

There are several factors which led to the passage of the 1911 code. These included the influence of the United States Forest Service, which was just getting well established; insistence of private timber owners for state legislation and aid, especially in Coos, Klamath, and Lane counties; and the destructive fire season of 1910 with its many fires throughout the state destroying an estimated timber volume of two billion board feet. (15)

The original State Board of Forestry was composed of seven members; namely, the Governor of the state, the Dean of the School of Forestry at Oregon State College, a representative from the United States Forest Service, Oregon Forest Fire Association, Oregon Wool Growers Associa-
tion, Oregon State Grange, and the West Coast Timberman. Thus the Board was composed of a group of men representing organizations that are vitally interested in every phase of forest activity. While the Board itself determines the policies and takes active part in administration, the responsibility for carrying out the provisions of the code and developing these policies lies with the State Forester, selected by the Board. (13)

The provisions relative to the creation of the Board are still the same, with the exception that two additional members have been added—a representative of the Western Pine Association and the Western Oregon Livestock Association. (13)

One of the fundamental policies of the Board, which has always been adhered to since its existence, is that of cooperation between the state, the private owners, and the Federal Government. This policy, especially in connection with private owners, has been one of the main reasons for the development of the present protective organization. In 1911, when the Board was established, there were two protective organizations functioning in the state; namely, Coos county association and Klamath county association. In 1912 there were eight and in 1913 there were sixteen associations organized throughout the state for the protection of timber. (13)
The first efforts of these associations were confined mainly to the control of fires in merchantable timber. Fires in cutover lands were considered of minor importance and were suppressed only when they became a threat to valuable timber. At that time there were only small areas of cutover land and it did not enter largely into future forest development. With the increase in lumber cut and a corresponding increase in cutover land, however, there came a realization of the importance of these lands in a state-wide forest policy and protection was extended to all forest lands in the state outside of the National Forest boundary. (12)

THE PRESENT PROTECTIVE ORGANIZATION

The present state protective organization is made up of sixteen different protective units with a District Warden as the administrative head of each. Thirteen of these districts are private timber owner associations, while the remaining three are state protective units. All District Wardens, however, are directly responsible to the State Forester to provide adequate protection. The thirteen association District Wardens are paid six months of the year by the State Forester. The state not only has considerable control of the associations, but also distributes the funds
made available by contributing funds from the state tax and Federal money from Clark-McNary funds to aid the private associations. (14)

To clarify the State Forestry Department's organization, a map of the state, showing the location and name of each organization, is given on page 6.

Each of these sixteen protective organizations protects the forest or potential forest land belonging to private individuals, corporations, counties, state and the Federal Government. These protective units vary in size from 213,026 to 1,185,479 acres. The District Warden is usually the only permanent or year-long employee in the field directly responsible to the State Forester for the protection of the area. (14)

Each District Warden's chief objective is prompt control of all fires in all locations in his protective unit. His problems are many. In the first place, the forest fire season or hazardous period is normally about a four months period from the first of June to the last of September, but fire weather and forest fires have occurred as early as April and as late in the year as December.

In order to protect this forest or potential forest land during fire season the District Warden needs a temporary organization. This is an organization that does not
have employment more than three to five months out of the
year.

THE TRAINING PROBLEM

This short term of employment creates a tremendous
problem because the peak of employment should closely fol-
low the bad fire weather; in fact, the perfect plan would
be always to have the correct number of men available at
the right time. All District Wardens strive to have this,
but seldom can, since there is a limit to the protection
funds; experienced men are not always available; weather
conditions may become so severe that, owing to smoky
weather, it is humanly impossible to find fires and to sup-
press them within a desired period and, fires do not occur
at any desired time, place or frequency. If men can be
prepared for an emergency by proper training, a tremendous
weakness can be overcome.

Proper training of the temporary personnel, then, is
an important part of protecting the forest land in a dis-
trict. This training of the personnel is one of the big-
gest problems that the District Warden has to face because
the work load is so varied that employment may fluctuate
tremendously. The many temporary jobs may require consid-
erable experience and understanding of the science of fire,
To add to the training problem, these temporary employees are drawn from widely divergent walks of life. Some men have native ability as woodsmen, but little technical education; others have less native ability but more education; while some men, definitely in the minority, have both experience and technical education.

Owing to the seasonal nature of the work, it is often difficult to retain an experienced crew from year to year and, as a result, there is quite a large turnover of personnel from one fire season to another. To add to the employment problem, when there is the greatest use of the forest by logging and sawmill operators, hunters and fishermen, land clearing, etc., there are fewer good men for the District Warden to hire because the better employment conditions do draw the better men into the logging industry which naturally gives more profitable year-long employment.

A man must be physically capable to often work long and strenuously on fires. He must know considerable about proper fire-fighting technique. This in itself is quite a job requirement because no two fires are alike and if mistakes are made in attacking a fire it may easily get out of control in a short time and result in considerable damage. A temporary employee also needs to know how to
contact the public, issue burning permits or even make arrests. All public contact work necessarily requires considerable tact and diplomacy. Other jobs require ability to build trails, telephone lines, or even construct buildings or shelters.

To add to the District Warden's problems, most of his men cannot be under his direct supervision because these men are placed alone on stations throughout a protective district. Quite often the only control of the men is by telephone. These temporary employees then, must be not only capable, but dependable as well.

Better to appreciate the District Warden's problems with his organized personnel, a chart of a sample district is included, showing the location of the men by positions. (See page 9.)

There is a definite line of promotion from one position to another. A new employee, therefore, has a line of progress or promotion from a simple job to a more complex one.

A member of a suppression squad is in the lowest bracket of the regular protection organization. His job or duties are relatively simple. He would have a chance to qualify himself for promotion to a better job as a lookout or patrolman. These two positions are usually considered
to be in the same bracket. The duties are more complex than in the suppression squad. Men employed as lookouts or patrolmen are in a position to work for promotion to the next higher bracket, which is a warden.

The warden has a still more complex job to perform and he is a key man in the organization. There is also an opportunity for promotion here. The warden may be advanced to the dispatcher's position.

The dispatcher's job is usually the ceiling for the regular protection force. This job is the most important and complex of all the protection positions. This man is the District Warden's direct assistant.

There is a possibility in the future that a dispatcher who has obtained a degree in Forestry may be promoted to a position which will offer year-round employment in the State Forestry Department. There is, then, a definite ladder of promotion for the men in the protection organization if they do the work well and are qualified for a better position.

There has been considerable training work done by all District Wardens to help their employees to qualify for a particular position. All men on a new job usually receive some instructions on the job from the District Warden or from a man with experience in the particular job.
of the districts have a one- or two-day group school for all the men just before the regular fire season. Another district, which employs eight lookouts, has a man detailed to contact each lookout at his station two or three times during the summer. One district has a man who devotes most of his time to inspecting and instructing all of the men in the organization.

All of the District Wardens have taken active part in the training of the men in the Civilian Conservation Corps camps for fire fighting. This training was first inaugurated in 1936 in all the camps under the Department's administration. This training has helped prepare a group of young, unskilled men to be an efficient fire-fighting force.

The District Wardens all realize that training is an important part of the work and that training of a man does result in better performance and increased efficiency, however, owing to the relative short period of employment of the men, the lack of funds, the tremendous variation in work load and the involved job requirements, there has not been a standard training plan adopted by the State Forestry Department.
THE ARMY SYSTEM OF TRAINING

Standardized training programs have long been a vital part of many public and private organizations. One of the greatest leaders in training is the United States Army and, according to Major General Grunert, Commander of Vancouver Barracks at a lecture to the Portland Reserve Officers on December 6, 1939: "The United States Army's system of troop training is considered to be the most complete and thorough in the world."

The Army system of training is so complete that the Heinz, Sears and Roebuck, General Electric, Westinghouse, and DuPont companies use it with some modifications. (4)

Because of the similarity of the protection in service training needs to the Army training, and the possibility for modified use of the basic principles of the Army system in this proposed training program, a discussion of the Army system will be outlined as follows:

"Objective of Military Training: The sole purpose of training is the preparation of units for service in national defense." "The Doctrine of One Army -- The training of Regular Army, the National Guard, and the Organized Reserves will be directed so as to develop a single homogeneous force with the same standards of efficiency." (24)
The Doctrine as to scope of training. Troops of all arms and services will be proficient in the following: (24)

1. Disciplinary and basic training of the soldier.
2. Physical training, personal hygiene, and first aid.
3. Customs and courtesies and laws of the Army.
4. Their own interior economy and administration.
5. Their own shelter, supply, and movement.
6. Their own security.
7. Signal communication.
8. Gas defense.
9. The care and use of their weapons, equipment, and transport.
10. The tactics and technique of their arm or service.
11. Their cooperative duties as a combat team.

Qualities to be developed by military training. Military training is intended to develop in the individual, and in the unit, the following qualities: (24)

1. Military discipline.
2. Health, strength, and endurance.
4. Initiative and adaptability.
5. Leadership.
6. Teamwork.
7. Technical proficiency.
8. Tactical proficiency.
The principle of progressive training. "All training should progress from the elementary to the more advanced. In accordance with this principle, training is initiated by training individual units; subsequent training will be devoted especially to the training of each subdivision from the smallest to the largest until the training of the unit as a whole is accomplished. In addition to its other values, a progressive procedure from smaller to larger units gives opportunity for the training of subordinate leaders in the responsible exercise of command. Refresher training must be carried out to the extent necessary to maintain standards once they are attained." (24)

This principle of progressive training results in training for promotion for all army personnel. A commissioned officer has a very definite training procedure to follow before promotion. To complete this training, there are three different schools to attend. The first of these is the Army and Service School which has a nine months curriculum. There are thirteen of these schools in the Army, one for each branch of arms or services. (24) The next course is the Command and General Staff School which has a nine months curriculum. There is only one of these schools in the Army. (24)

The last and most advanced school of the Army is the Army War College which has a nine months curriculum for
The training of the enlisted man is also along the progressive procedure of training for promotion or advancement.

The newly enlisted man is trained to be an efficient "buck private". Then for promotion he must complete the requirements for a private, first class, then on to corporal and finally to sergeant. The sergeant's or noncommissioned officer's rank has many grades in technical and administrative capacities. There are arms and service schools for all grades of noncommissioned officers.

It is felt that the Army's system of progressive training for promotion is most adaptable for modified use in the training program to be suggested here in this paper as an aid to the District Wardens in the training of their regular protection organization.

**SUMMARY**

The outstanding points of the study of this chapter on The Presentation of the Problem are that the reader has gained the history of the background of Oregon forest fire protection system, how it is organized, the training problems, the army system of training and how this system may be used to better present training methods.

The objective of this thesis will be attained if the plan presented assists the District Wardens in training of their regular fire protection personnel.
CHAPTER II
SUGGESTIONS FOR SELECTING WHAT TO TEACH

INTRODUCTION

Objective: To suggest a practical procedure for selecting the subject matter for fire-control training.

Instruction must be planned to include the essential elements which make up efficiency on the job. All Army training material is classified under three main headings which are the essential elements for efficiency on the job. (24) These duties are: 1. Disciplinary and basic, which include all duties related to personal health; care of personal equipment; close-order drill, which teaches the recruit to respond to and obey commands of his superiors, and care of arms and equipment. 2. Technical, which includes all duties requiring technical or special knowledge to perform, such as how to estimate wind velocity when firing a rifle or how to fire on a moving target. 3. Tactical, which includes all duties requiring ability to perform, such as how to conduct yourself on outposts or how to cross an unfordable stream. (24)

This same procedure can be followed in the training of fire protection personnel by analyzing each position to determine the basic or disciplinary technical or tactical duties. To illustrate: (a) basic, personal health and
first aid; (b) Technical, how to read and use maps and (c) tactical, how to build a fire trail.

Before we can analyze what a District Warden requires of his men, we need to know what the fire-control duties are and what positions are required. The fire-control duties which are broadly defined as the entire group of activities including prevention, preparation for suppression or presuppression, and suppression are defined in detail in Section A of the Appendix. The fire protective positions as classified by the State Forester are: flying squad, lookout, patrolmen, warden and dispatcher. This classification of the positions with a broad definition of the duties of each is included in Section B of the Appendix.

RECOMMENDATIONS FOR PREPARING MATERIAL FOR SELECTING WHAT TO TEACH

To help the District Wardens in selecting what to teach, it is recommended that a job analysis be made of each position. To make this job analysis, three steps are suggested: First, prepare each position for analysis by listing the headings, basic or disciplinary duties, technical duties and tactical duties. Each of these main headings should be separately analyzed as in Step II.

Second, this would require preparing a list of detailed duties for each of the above headings for each position. This could be accomplished by anyone familiar with
protection by careful analysis of each position and its detailed requirements. (17)

The mere listing of jobs or duties which a man may be called upon to perform is wholly inadequate from the standpoint of determining what should be taught. In order to have proper instructional material, each duty must be separated into the physical operations necessary to accomplish it. (17) Therefore, a third step is necessary to determine what should be taught.

Third, this involves the analysis of each duty to determine the necessary operations to accomplish the duty. This can be done by anyone thoroughly familiar with protection duties by thinking through each duty and listing, step by step, the necessary operations required to perform the duty. In case of doubt, an observation could be made and the steps listed in chronological order.

SAMPLE LISTS PREPARED TO ILLUSTRATE MATERIAL NEEDED FOR SELECTING WHAT TO TEACH

Further to clarify this suggested procedure, a job list was prepared for each of five protective positions by following the three steps suggested and by referring to an analysis made by the United States Forest Service for similar positions. These classified job lists are not intended to be complete or all-inclusive, but are offered as
The following job lists for each position are classified under the three essential elements:

1. **Flying Squad Member's Job List of Principal Duties**

   (a) **Basic or Disciplinary Duties**

   Furnish information to the public and enlist public cooperation.
   
   Maintain proper conduct.
   
   Care of household and personal equipment.
   
   Personal health and first aid.
   
   Read protective base and topographic maps.

   (b) **Technical Duties**

   Learn the country and correlate it with map.
   
   Care for and make minor repairs of telephone.
   
   Care for and operate a radio.
   
   Care and use of a compass.

   (c) **Tactical Duties**

   Care and use of construction tools.
   
   Care and use of horses, cars, or trucks.
   
   Construct or maintain telephone lines.
   
   Care and use of fire-fighting tools.
   
   Care and use of special equipment.
   
   Suppress fires.
   
   Mop up fires.
   
   Execute work on job lists.
2. Lookout's Job List of Principal Duties

(a) Basic of Disciplinary Duties

Maintain proper conduct.

Furnish information to the public and enlist cooperation.

Explanation and administration of state fire laws and regulations.

Make systematic examination of country.

Care of household and personal equipment.

Personal health and first aid.

(b) Technical Duties

Recognize and take action on violations or on state fire laws.

Read protective base and topographic maps.

Learn the country and correlate it to the map.

Detect false and legitimate smokes.

Read and use panoramic pictures.

Care for and make minor repairs of telephone.

Care for and operate a radio.

Make fire danger and weather observations.

(c) Tactical Duties

Locate and report fires.

Make progress reports on going fires.

Observe and report progress of lightning storms.

Care and operation of a firefinder.
Construct or maintain roads or trails.
Construct or maintain telephone lines.
Care and use of fire tools.
Make regular reports to the dispatcher.
Execute work in the job list.
Record location of fires and report to dispatcher.
Record lightning strikes.

3. Patrolman's Job List of Principal Duties.
   (a) Basic or Disciplinary Duties.
       Furnish information to the public and enlist public cooperation.
       Explanation and administration of state fire laws and regulations.
       Care of household and personal equipment.
       Maintain proper personal appearance.
       Personal health and first aid.
       Readiness for quick get-away to fires.
   (b) Technical Duties.
       Recognize and take action on violations of state fire laws.
       Read protective base and topographic maps.
       Learn the country and correlate it to the map.
       Determine fire causes if possible on arrival.
       Make out preliminary fire report.
       Examine country for smoke.
       Care for and make minor repairs on and use telephone.
Care for and operate a radio.
Make fire danger or weather observations.
Care and use of compass.

(c) Tactical Duties
Construct or maintain telephone lines.
Construct or maintain roads or trails.
Care and use of horses, cars, or trucks.
Care and use of fire equipment.
Make regular reports to the dispatcher.
Execute work on job lists.
Locate and report fire.
Travel to and locate fires.
Suppress small fires.
Scout large fires.
Work in corral or large fields.
Work on mop up of large fires.

4. Warden's Job List of Principal Duties

(a) Basic or Disciplinary Duties
Furnish information to the public and enlist public cooperation.

Explanation and administration of state fire laws and regulations.

Care of household and personal equipment.
Maintain proper conduct.
Personal health and first aid.
Maintain proper personal appearance.
(b) Technical Duties

Recognize and take action on violations or on state fire laws.
Read protective base and topographic maps.
Learn country and correlate it to the map.
Maintain special and current reports.
Determine fire cause if possible on arrival.
Care for and make minor repairs on telephone.
Construct or maintain telephone lines.
Make fire danger or weather observations.
Care and use of compass.
Make out a preliminary fire report.

(c) Tactical Duties

Post fire warning or closure signs.
Issue burning permits.
Work on logging slash disposal.
Care and use of horses, cars, and trucks.
Construct or maintain roads and trails.
Care and use of fire equipment.
Make regular report to the dispatcher.
Execute work on job list.
Receive report and record report on fire.
Travel to and locate fire.
Take proper initial action.
Suppress small fires.
Scout large fires.
Plan attack on large fires.
Select and lay out fire camps on large fires.
Act as a foreman, sector boss, or fire chief while suppressing fire.
Act as a foreman, sector boss, or fire chief on mop up of fires.
Map fires and make appraisal of fire damage.

5. Dispatcher's Job List of Principal Duties

(a) Basic or Disciplinary Duties

Furnish information to the public and enlist public cooperation.
Explanation and administration of state fire laws and regulations.
Maintain proper conduct.
Maintain proper personal appearance.
Maintain clean and presentable office and quarters.
Personal health and first aid.
Maintain morale of organization.

(b) Technical Duties

Acquire or keep informed on all physical and cultural features of the district.
Assist the District Warden with preparation for training.
Train and inspect the organization as directed.
Compile fire records and reports.
(c) Tactical Duties

Direct the preparation of fire equipment for fire season.

See that protective organization is and equipment are functioning.

Operate fire danger board.

Direct posting of fire warnings and closures.

Direct action on violations of state fire laws and regulations.

Control the issuance of burning permits.

Keep record on available fire fighters, equipment and supplies.

Take action on reported fires.

To illustrate Step III, the analysis of the duties to determine the necessary operations to accomplish, one principal duty was selected under the three headings for each position and broken down into the operations required for accomplishment in a suggested form for assembling this information. Only one illustration was used for each heading, as the author feels this will suffice to illustrate the principles involved. It was not the aim to burden the reader with a detailed analysis of all the duties previously listed.
### Flying Squad Position

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<td><strong>(a) Basic or Disciplinary Duties</strong></td>
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<tr>
<td>1. Care of household and personal equipment.</td>
<td>1. Orderly arrangement and storage of personal effects.</td>
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<tr>
<td></td>
<td>2. Disposal of garbage.</td>
</tr>
<tr>
<td></td>
<td>3. Keep station fire equipment in readiness.</td>
</tr>
<tr>
<td></td>
<td>4. Maintain grounds.</td>
</tr>
<tr>
<td>2. Etc.</td>
<td>1. Etc.</td>
</tr>
<tr>
<td><strong>(b) Technical Duties</strong></td>
<td></td>
</tr>
<tr>
<td>1. Care for and operate a radio.</td>
<td>1. Set up radio and open up for operation.</td>
</tr>
<tr>
<td></td>
<td>2. Turn switch to receive and listen to be sure there will be no interference when transmitting.</td>
</tr>
<tr>
<td></td>
<td>3. Turn switch to transmit and give call letter - then message</td>
</tr>
<tr>
<td></td>
<td>4. Sign off.</td>
</tr>
<tr>
<td></td>
<td>5. Make entry in radio log.</td>
</tr>
<tr>
<td>2. Etc.</td>
<td>1. Etc.</td>
</tr>
</tbody>
</table>
Flying Squad Position - (Continued)

(c) Tactical Duties

1. Care and use of an axe.
   1. Keep axe well sharpened.
   2. Always look around before swinging axe.
   3. Always keep axe under control.

2. Etc.
   1. Etc.

Lookout Position

<table>
<thead>
<tr>
<th>Duties To Be Performed</th>
<th>Operations To Accomplish</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Basic or Disciplinary Duties</td>
<td></td>
</tr>
<tr>
<td>1. Maintain proper conduct.</td>
<td>1. Use proper language.</td>
</tr>
<tr>
<td>2. Maintain dignity of position.</td>
<td></td>
</tr>
<tr>
<td>3. Maintain friendly relations with public.</td>
<td></td>
</tr>
<tr>
<td>4. Exercise tact and diplomacy with public.</td>
<td></td>
</tr>
</tbody>
</table>

2. Etc.
   1. Etc.

(b) Technical Duties

1. Care and operation of a firefinder.
   1. Level firefinder.
   2. Check orientation.
Lookout Position (Continued)

3. Check adjustment of slidade.
4. Use of slidade.
5. Use of vertical angle scale.
6. Use of vernier.
7. Read azimuth.

(a) Tactical Duties

1. Locate and report fires.

1. Use firefinder to determine azimuth, vertical angle, distance, and size of fire and locate on map.

2. Locate fire by local landmarks.

3. Make out lookout report.


2. Etc.

1. Etc.

Patrolman Position

<table>
<thead>
<tr>
<th>Duties To BePerformed</th>
<th>Operations ToAccomplish</th>
</tr>
</thead>
</table>

(a) Basic or Disciplinary Duties

1. Maintain proper personal appearance.

1. Wear uniform.

2. Keep well groomed.
Patrolman Position (Continued)

3. Maintain good posture.

2. Etc.

1. Etc.

(b) Technical Duties

1. Learn the country and correlate it to the map.

2. Make notes on map during exploration trips pertaining to physical features.

3. Study panoramic photos in connection with trips.

(c) Tactical Duties

1. Suppress small fires.

2. Select point of attack.

3. Swamp out brush around edge of fire.

4. Dig fire line.

5. Mop up and put out all hot spots.

2. Etc.

1. Etc.
### Warden Position

<table>
<thead>
<tr>
<th>Duties To Be Performed</th>
<th>Operations To Accomplish</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>(a) Basic or Disciplinary Duties</strong></td>
<td></td>
</tr>
<tr>
<td>1. Furnish information to the public and enlist public cooperation.</td>
<td>1. Give information on forest regulations.</td>
</tr>
<tr>
<td></td>
<td>2. Give information on distances and routes of travel.</td>
</tr>
<tr>
<td></td>
<td>3. Give information on points of interest - mountains, lakes, berry patches, etc.</td>
</tr>
<tr>
<td></td>
<td>4. Give information on forest resources - industries.</td>
</tr>
<tr>
<td><strong>(b) Technical Duties</strong></td>
<td></td>
</tr>
<tr>
<td>1. Read protective maps.</td>
<td>1. Locate and point out on map any point from legal description.</td>
</tr>
<tr>
<td></td>
<td>2. Give oral or written legal description of any point on map.</td>
</tr>
<tr>
<td></td>
<td>3. Locate or give oral or written description of any point on map by local landmarks.</td>
</tr>
<tr>
<td>2. Etc.</td>
<td>1. Etc.</td>
</tr>
</tbody>
</table>
(c) Tactical Duties

1. Issue a burning permit.

1. Examine area with landowner and state law requirements.

2. See that fire line is adequate.

3. Give instructions on time to burn.

4. Give instructions on firing procedure.

5. Write out burning permit.

---

Dispetcher Position

<table>
<thead>
<tr>
<th>Duties To Be Performed</th>
<th>Operations To Accomplish</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Basic or Disciplinary Duties</td>
<td></td>
</tr>
</tbody>
</table>

1. Maintain morale of organization.

1. Recognize and commend outstanding performances of duties.

2. Check questionnaires or written material on training and promptly advise men of results.

3. Schedule periods for telephone "get-togethers".
Dispatcher Position - (Continued)

4. Plan ways and means of obtaining competition among the organization members.

5. Permit no man to get by with sub-standard work or conduct.

2. Etc.

1. Etc.

(b) Technical Duties

1. Compile fire records and reports.

1. Keep daily diary or log.

2. Issue transfer of property slips on all equipment.

3. Compile information for semi-monthly fire report.

4. Make up Form A fire reports.

5. Maintain fire progress map.

2. Etc.

1. Etc.

(c) Tactical Duties

1. Operate fire danger board.

1. Assemble the burning index factors.

2. Set burning index dials.
Dispatcher Position - (Continued)

3. Determine burning index number from tables.
4. Assemble risk factors.
5. Set risk dials.
6. Determine class of day number from table.
7. Set class of day dial.

2. Etc.

1. Etc.

SUMMARY

A plan was suggested for selecting what should be taught. The suggested steps in this plan were: (a) listing the headings, basic duties, technical duties and tactical duties for each protective position; (b) listing the detailed duties under each heading for each position, and (c) analyzing each duty to determine the necessary operation to accomplish.

Job lists for each position were included and one duty analyzed to determine the operations required to accomplish under each heading for each position to facilitate the
similar preparation by a District Warden, which would be necessary to complete the preparation of the material needed for selecting what should be taught.
CHAPTER III
SUGGESTIONS FOR DETERMINING WHO SHOULD BE TAUGHT

INTRODUCTION

Objectives: 1. To prepare a plan of selecting men who should receive training to increase their efficiency on the position to which they are assigned.

2. To propose a plan for selecting men for instruction who are qualified for promotion.

District Wardens habitually report that some of their men are well qualified to perform most of their duties, but are weak in others which often are quite important, while a few men are well qualified to perform all work assigned to them.

Therefore, there are two training tasks -- first to bolster up or improve some of the men who are found deficient and second, to prepare qualified men for promotion.

PROPOSED TRAINING PLAN FOR INCREASING EFFICIENCY ON THE JOB

To find the duties that each individual man can or cannot perform satisfactorily two steps are suggested; one is to determine the duties which are not satisfactorily performed and the other is to combine the individual de-
ficiencies by position to obtain the entire group's training needs.

The first step is to determine the duties which are not satisfactorily performed. To do this it would be desirable to have a list of duties for each employee with the relative efficiency of the accomplishment graded. These grades or ratings could be on a numerical basis, and be made by inspection on the job, by oral or written examination, or by personal knowledge of past performances. This could be prepared by referring to the job lists, determination made as indicated in Chapter II, "Suggestions for Selecting What To Teach", and listing these for each man on a form similar to the one included here which would show a numerical rating of the trainee's ability to perform each duty. (17) This will indicate the deficiencies in which each man should be trained.

### INDIVIDUAL PERFORMANCE RECORD

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Duties</th>
<th>Operations To Accomplish</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Inspection Grade Date</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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<td></td>
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</tr>
</tbody>
</table>


The second suggested step is to combine the individual deficiencies by position to obtain the entire group's training needs. This record or tabulation will give the instructor a base on which to formulate his training program. The duties in which several men are deficient would obviously be most adaptable for group training. The duties that have only one or two men requiring training will probably be treated as individual cases and individual training will suffice.

PROPOSED TRAINING PLAN FOR PREPARING QUALIFIED MEN FOR PROMOTION

A progressive training system for the state could follow the system used by the United States Army. The chief characteristics of this system is that training progresses from the elementary to the more advanced or, from the simple to the complex and is known as a training for promotion system. (24)

The basic principles of this army training for promotion system are: (a) All training must be given and an examination passed satisfactorily before a man is qualified for promotion; (b) several men are trained and waiting for promotion before an opening occurs; (c) selection for promotion is based on performance during the training program and (d) training for promotion is available to all men, regardless of rank, so long as they are willing to apply
themselves. The result of this system is greater interest and thus more incentive by the individual, which results in considerable self training. (24)

According to the United States Army system, the District Warden could make his selections for the training of men for promotions. Plans could be made so that selected members of the flying squad, lookout, patrolmen, etc., would be given training in the duties for the next higher position in the promotion ladder.

In order to facilitate this type of training program, it is desirable to have a system for recording basic information and training given for each man. The basic information could include the person's age, education, experience, general ability, attitude, and adaptability. The training record might include a list of all positions, the principal duties for each position, the record of training, and performance. It is deemed desirable to have a form which will include all of this information on one sheet of paper, so that a progressive record of each man's general ability and advancement will be provided. (17)

Therefore, the form included here, is hoped will provide the District Warden with enough information to select a man for promotion and also serve as a record of training needed.
# PERSONNEL TRAINING RECORD

## BASIC INFORMATION

<table>
<thead>
<tr>
<th>Name</th>
<th>Date Hired</th>
<th>Education</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Experience</th>
<th>General ability: Poor</th>
<th>Poor</th>
<th>Good</th>
<th>Excellent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Attitude</th>
<th>Adaptability</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## TRAINING RECORD

<table>
<thead>
<tr>
<th>Position</th>
<th>Principal Duties</th>
<th>Training Given By</th>
<th>Date</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Flying Squad</td>
<td>(1. Basic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2. Technical</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(3. Tactical</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Lookout</td>
<td>(1. Basic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2. Technical</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(3. Tactical</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Patrolmen</td>
<td>(1. Basic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2. Technical</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(3. Tactical</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Warden</td>
<td>(1. Basic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2. Technical</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(3. Tactical</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Dispatcher</td>
<td>(1. Basic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2. Technical</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(3. Tactical</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
SUMMARY

It has been recognized that there are two procedures for determining which type of men should be taught. The first suggested plan for training men to improve their performance on a particular position. The recommended steps for this determination included a means for selecting the duties that were not being satisfactorily performed, then combining the individual deficiencies for the positions into group deficiencies and from this, deciding whether group or individual training was necessary to obtain desired performances.

The second proposed plan for selecting men for training for promotion was based on the United States Army system. To facilitate this plan, a personnel training form was included to be used as a record of training with space provided for enough information to record a man's training need and training progress.
CHAPTER IV
SUGGESTIONS ON HOW TO TEACH

INTRODUCTION

Objective: To suggest a practical procedure for teaching fire control duties.

Good teaching as defined by the Army training manual is imparting knowledge or skill to individuals in such form that the material can be easily mastered. All training should be planned and conducted so the objective is reached in the minimum time without sacrificing thoroughness and so varied as to stimulate interest and thus insure effective results. (24)

Effective instruction in any subject, whether in the classroom or on the training ground usually requires the following essential elements: (a) preparation on the part of the instructor, (b) explanation or presentation, (c) application or practice to acquire skill in execution, (d) examination or test to determine progress or efficiency. (24)

It has long been recognized that men who have had to plan training programs and serve as instructors often have a thorough knowledge of their subject, but are unable adequately to prepare or impart their knowledge to others in such a way that it would be thoroughly understood. (17)
It is felt desirable, therefore, to present or survey the types of training and methods of teaching that have been used for in-service training.

TYPES OF TRAINING

The three types of training found to be most usable for fire control instruction by the United States Forest Service are: 1. Group; 2. Individual; 3. Telephone. (17)

1. Group training.--- Assembling together of several men for instruction is an extremely valuable means of presenting a part of each man's training. The time devoted to the instruction of a group will not, however, adequately prepare that man for his position. This is true because only a small number of the duties can be covered for each position and not all jobs can be taught to a group. (17)

In spite of this there is considerable value in group instruction in addition to the training given. The men not only have a chance to study and work together, but they have an opportunity to meet all the men in the organization and thus develop a spirit of good-fellowship and teamwork. Another advantage is that the instructor is in a position to observe the comparative ability of the men to get along together. (17)

Group instruction will require considerable advance planning -- preparation so that the essential elements of
good teaching are properly covered. The following steps are used by the United States Forest Service as a guide in preparing a group training program: (a) Training needs should be analyzed. (b) Training topics and training jobs selected. (c) Methods of training selected. (d) The instructors should be selected, assigned teaching topics, lesson plans supervised, and instructors trained to teach. (e) Individual men need to be segregated into training groups and assigned to instructors. (f) Class periods will need to be estimated and an effort made to see that they are followed. (g) Practices will need to be observed to see that instruction is effectively given.

Group training is desirable when several men need instruction on the same material. Usually this can be given where facilities are available to carry out the various duties under as practical conditions as possible.

Group instruction should also be given when the men are all employed and just before the fire season starts.

2. Individual training. Training authorities consider individual training or training on the job the most effective method for training for efficient service. The greatest disadvantage of this method is the time consumed in giving one man complete individual instruction. Quite often it is impossible for the District Warden or his qualified assistant to contact and instruct all his men within
a few days after the fire season begins. This type of training does not preclude that no advance preparation is necessary. It has been found desirable to prepare lesson plans for each method of instruction whether a job is taught to a group or to an individual. (17)

Training an individual is not static but is a continuing process. To be well done, to be effective and worthwhile, individual training must be carefully planned, assigned and scheduled. (17)

District Wardens or qualified assistants should handle this work and carry it out at all times when there is evident need. The major part of training or developing an individual workman is accomplished by training on the job or in place. (17)

3. Telephone training. -- The United States Forest Service has probably made the greatest use of this type of training. They realize that its effectiveness is in proportion to how well it is planned, subsequently carried out and followed up. While it is not as effective as training on the job, telephone training does have the advantage of saving a great deal of time and it can be carried on at frequent intervals with a widely scattered organization.

"Just telephone conversation is by no means training. The instructor-trainee relationship must be recognized by both parties; the instructor must have a specific training
objective in mind and plan his instruction accordingly. The trainee must understand clearly what is proposed for him to learn. By experimenting, a District Warden can determine the training jobs possible to handle by telephone. Dispatchers can give problems and the employees can seek advice and instruction via the telephone. (17)

No attempt should be made to train a man exclusively by telephone, but definite training jobs can be listed for the dispatcher to carry out by telephone at any desired time during the fire season. (17)

**METHODS OF TEACHING**

The training methods that have been found to be the most practical for men engaged in fire control work are: 1. The Four-step; 2. The Conference; 3. The Problem Solution or Case; 4. The Inspection; 5. Written Instructions, and 6. The Lecture. (17)

1. **The Four-step method.** This method has been found the best to use in teaching and assisting new or unskilled employees to master some job or standard procedure of work. It has proved to be the most satisfactory for instructing protection employees on how to care for and operate a fire-finder, how to read a compass, and how to use an axe or hazel hoe in building fire trails, etc. This Four-step pro-
procedure is a comparatively simple one. The instruction process progresses through the following four steps: Step I, "The Preparation", Step II, "The Presentation", Step III, "The Application", and Step IV, "The Test". (17)

The purpose of Step I, The Preparation, is to stimulate interest in the proposed instruction--to introduce the topic. It involves the act of raising in the learner's mind the question, "How do you do it?" This requires a certain amount of exploring around in the trainee's mind to find a common ground of understanding. This may be done by suggestive questioning, illustrating, demonstrating or by stories.

In Step II, The Presentation, the instructor presents the lesson. This, then, is where the new idea, material, or operation is presented. Wherever possible it is very desirable to guide the trainees through the thinking process and require them to grasp the idea themselves. To impart these new ideas there is need for training methods. The following methods have been widely used by members of the Forest Service and found to be of value: (17)

a. The Demonstration. The instructor demonstrates to the trainee how to do the job under typical working conditions; for example, how to sharpen an axe with a file, or how to use a hazel hoe in building a fire trail.

b. The Explanation. This is a companion to demonstration. The instructor may explain what he intends to
demonstrate or, after demonstrating, explains why he did the job a certain way. For example, in sharpening an axe, the instructor might point out "You will notice that as I stroke the file across the axe blade, I hold the file so it is not possible to cut myself."

c. Suggestive Questioning. This method should call for questions that require more than a yes or no answer. They should be questions that require thinking on the part of the trainee. Thus, if a trainee is given a chance to think out the right answer or right method, he grasps the lesson or demonstration much more quickly.

d. The Illustration. This method may include the use of drawings, pictures, or models to convey the idea. For example, a group may be receiving instructions on how to fall a tree. The instructor may sketch where to put the "face" on a tree that leans the wrong way.

Finally, in Step II, the trainee has been presented with the instruction but has not been given a chance to follow it. The instructor does not know whether his demonstration or illustration was understood by his trainee. This, then, is where Step III enters in. (17)

It is in Step III, The Application, that the trainee is given an opportunity to try out the instructions presented in Step II. To illustrate: If the lesson has to do with sharpening an axe, the trainee is given an axe and a file
and he proceeds to sharpen the axe as instructed in Step II.

A very essential part of this step is that each individual trainee's learning actually begins only when he is provided with a chance for mental or manipulative activity. Provision must be made in group training for every man to try out the new job.

Suitable questions should be asked by the instructor to check essential knowledge.

Step IV, The Test, is the step which determines whether or not the trainee can do the job unaided. If the instruction has been properly carried out, the learner will be able to do that which the instructor intended. Methods for carrying out Step IV may be as follows:

a. The trainee does the job without assistance.
b. The trainee does the job without assistance and explains the principle involved.
c. The trainee is required to pass a written test.
d. The trainee is required to pass an oral test.

The following, taken from (17), summarizes the Four-step Method in an excellent manner:

<table>
<thead>
<tr>
<th>The Four-step Method</th>
<th>Condensed Form</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step</strong></td>
<td><strong>Purpose</strong></td>
</tr>
<tr>
<td>I. Basis for lesson</td>
<td>Secure interest;</td>
</tr>
</tbody>
</table>
### The Four-step Method - Condensed Form (Continued)

<table>
<thead>
<tr>
<th>Step</th>
<th>Purpose</th>
<th>Method for Carrying Out</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.</td>
<td>Creating value or need. Secure desire to learn.</td>
<td>Previous lesson; or to show value - need for knowing. Illustrations. Demonstrations.</td>
</tr>
<tr>
<td>(Con-</td>
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<tr>
<td>ned,)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>III.</td>
<td>Trainee does job. Instructor supervises, assists if necessary, checks for essential knowledge.</td>
<td>By having trainee do the job. Instructor asks suitable questions for checking essential knowledge.</td>
</tr>
<tr>
<td>IV.</td>
<td>Trainee does the job without help.</td>
<td>By having the trainee do the job unaided. Questions (Written and Oral.) Situations changed when possible, principle learned in Step II and Step III the same.</td>
</tr>
</tbody>
</table>

Further to clarify the use of this method a sample lesson plan is included which was prepared by referring to (17)

**Sample Lesson Plan**

1. **Job.** How to operate a portable radio
2. **Class** Six men, inexperienced in use of radio
   **Location** In a timbered area
3. **Material** Two S or SV type radiophones
4. **Estimated Time** One hour
Step I -- The Preparation

Questions to arouse interest in radio

1. Does our telephone system give us complete and adequate communications at all times?
2. Where might a radio be used?
3. Is there any chance you might need to use a radio this fire season?
4. Would it be a good idea for all of you to know how to operate a radio?

Step II -- The Presentation

<table>
<thead>
<tr>
<th>Operations</th>
<th>Plan for Instruction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Open up the radio, take out the aerial, erect and hook it into aerial post.</td>
<td>Demonstrate by opening up the set, taking out the aerial; tie a rock on the string and throw it over a limb, adjust aerial length and hook into aerial post. Explain that the aerial should be as nearly vertical as possible and it should not touch trees, brush, or the ground.</td>
</tr>
<tr>
<td>2. Throw switch to receive; listen through headphones or speaker and dial slowly by the assigned frequency.</td>
<td>Demonstrate by turning switch and turning dial slightly. Explain that the hissing noise is a sign that the receiver is working. Also that a radio operator should always listen in on the assigned frequency before transmitting to keep from interfering. The necessity of keeping dial on assigned frequency.</td>
</tr>
</tbody>
</table>
Step II—The Presentation (Continued)

<table>
<thead>
<tr>
<th>Operations</th>
<th>Plan for Instruction</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. Throw switch to transmit; give call letter of the station and the call letter of the station to be contacted.</td>
<td>Demonstrate how to throw switch to give call letters and speak into the microphone. Explain that the call letter only needs to be given when making the initial contact. That a normal tone and slow, distinct speech is desirable.</td>
</tr>
<tr>
<td>4. Throw switch to receive and get acknowledgment, then state message.</td>
<td>Demonstrate how to throw the switch and state message. Explain that confirmation of message is always essential and, if necessary, repeat the message.</td>
</tr>
<tr>
<td>5. Return switch to receive; confirm message; return switch to transmit and sign off.</td>
<td></td>
</tr>
<tr>
<td>6. Throw switch to off; take down aerial and close up the radio.</td>
<td>Demonstrate how to take down aerial and place it in the set, and how to be sure radio is off when the set is assembled.</td>
</tr>
</tbody>
</table>

Step III—The Application

Members of the class are divided into two groups and each group is given a radio. The two groups should be at least one hundred feet apart. Each man performs the complete operation while the instructor supervises and assists if necessary.
Instructor's questions for checking essential knowledge.

1. Why should a radio operator listen in before transmitting?
2. If you do not contact the station called the first time what should you do?
3. What is the assigned frequency and
4. Where is it on the dial?

**Step IV--The Test**

Members of the class set up, operate and take down the radio without assistance.

2. **The Conference method.** This method may be defined "as a group of experienced men, assembled under the guidance of a conference leader to exchange freely their ideas and opinions and pool their experiences in the process of analyzing and solving a problem or arriving at some decisions." (17)

The Conference method may be used in dealing with a real problem or with training. In using this method for training, the objective for the conference is that of developing more intelligent thinking on the part of the individual men, so that, when confronted with similar situations in the future, they can think their own problems through and arrive at a better decision. (17)
One distinct difference between any serious group conversation and the conference procedure is that evaluating and weighing of evidence is of prime importance. This is encouraged by the use of charts with special headings for the development of each topic. The phases or steps in the development of a topic are as follows: Phase 1. Assembling facts. This is the step where ideas, facts, or experiences which may have some bearing on the problem are written down, if possible on a chart. Phase 2. Functioning of the facts, or selecting the facts or experiences out of Step 1 which bear directly on the problem. In this very important phase of the conference, the leader must be constantly on the alert in guiding the group in order that they may select the important factors having to do with the problem, and reject those which are unimportant. Suggestive questions are the conference leader's most useful device in this process. Phase 3. Evaluation of functioning facts or experience. This phase is often intended to show that the conference functions through a mental process of weighing one factor against the other. In most instances this third phase of the conference is purely a mental process. Phase 4. Decision or Conclusion. The Leader's aim in this phase should be to have one of the conferees summarize the discussion, after which the leader should restate the summary in the nature of a question to the
group as a whole.

It is possible for a conference leader to work out a comprehensive plan for the conference in advance. The following outline is a useful guide for this purpose: (17)

Outline For Planning Guided Conference

a. Write out the objectives of the conference
   (1) Major
   (2) Minor

b. Decide on the method of obtaining objectives
   (1) Direct
   (2) Indirect

c. Determine method for getting the conference started
   (1) Direct statements (oral or written)
   (2) Suggestive questions (written, oral, overhead or direct)
   (3) Citing an experience (written or oral) followed by leading chart headings

d. Chart headings (visualize space on chart, and plan space to best advantage and develop in orderly manner).

e. Prepare a list of points which should come out in first phase of conference.

f. Determine cases, illustrations, and questions which can be used for stimulating discussions and bringing out essential facts or data.

g. Plan how essential facts will be selected.
h. Consider a tentative plan for evaluating essential facts or experiences.

(1) Mental evaluation on the part of individual conferees.

(2) Group evaluation.

i. Plan for arriving at a decision or conclusion.

(1) Written

(2) Oral

(3) In each conferee's mind.

j. Best use of time used in evaluating a conference episode rather than in planning.

Some of the results that may be expected from a well-conducted conference are: 1. Thinking will be stimulated. Trainees will be more consistent in thinking their problems through, and will make better decisions in future work. 2. A spirit of understanding and cooperation is developed in an organization from looking at all angles of a problem or situation by pooling experiences and exchanging opinions. 3. Each trainee will have more respect for the "other fellow's point of view". 4. The ability and desire to analyze problems will be stimulated. 5. Individual habits and attitudes may be modified or changed. 6. Members or a group are more willing to accept and carry out a policy when they have some part in its formation.

Further to classify the use of this method, a sample lesson plan is included. This was prepared by referring
to the procedure used in (17). A hypothetical case was used to illustrate the use of the conference method to ten experienced fire wardens with the topic "What Factors Influence Fire Line Location".

Sample Lesson Plan

Conference Leader -- The District Warden; Conference Group -- ten experienced fire wardens; Topic -- "What Factors Influence Fire Line Location; Objective -- To help each fire warden realize that there are several factors that influence fire line location and that these factors will vary on different fires.

The First Stage

Purpose: "The assembling of ideas, facts, or experiences".

The District Warden opens the conference by stating: "You men have all had considerable fire fighting experience and you probably know the conditions that may influence the location of a fire line. I think that one of the factors is the slope or topography". The District Warden then puts on a chart or blackboard the topical heading and asks for each man to think of a suggestion. As suggestions are given, the District Warden enters them with no priority or argument and a list is obtained under the heading, as follows:
What Factors Influence Fire Line Location

1. Slope or topography
2. The brush or tree cover
3. The time of day
4. The humidity
5. The number of men available
6. Wind
7. Snags
8. The time of year
9. The amount of moisture in the fuel
10. The rate of spread
11. The ease of construction
12. The water available
13. The use of machinery
14. The type of men
15. Size of fire

If this list does not bring out all the points the leader wishes, he may ask leading questions. When the list includes all the points the leader wishes to bring out, he is ready for the second stage of the conference.

The Second Stage

Purpose: "The selection of facts or experiences which are the most important."

The conference leader's next job is to separate the important factors that influence fire line location from the
unimportant items from the list which has just been compiled. He addresses the group as follows: "Suppose we take a few minutes and review this list and select the points which are the most important." The group, after a certain amount of discussion, select seven points, and these are added to the chart by the leader, making it read as follows:

Major Factors Which Influence the Location of a Fire Line

1. The amount of moisture in the fuel
2. The humidity
3. The slope or topography
4. The rate of spread
5. The ease of construction
6. The amount of wind
7. The amount of fuel or brush and tall cover

The Third Stage

Purpose: "The evaluation of functioning facts or experience."

The conference leader requests the group to revise the second list for the purpose of determining which one of the items listed is of the most importance and which one is of the least importance. The answer to this question causes several minutes of serious study by the group. Finally one man volunteers that, in his opinion, humidity is of the greatest importance. This statement is immediately chal-
lenged by a second man who says that wind has more to do with where a fire line should be located. This should create a discussion by several members of the group who may select other points as being of greatest importance. During the discussion, the leader should ask a question now and again to direct the group's attention to some angle of the problem which they may have overlooked.

The Fourth Stage

Purpose: "The conclusion of decision."

When the discussion starts to subside, the conference leader should ask the men this question, addressing the group as a whole: "I have listened to your discussion with considerable interest. Each one of you has backed up his stand with some logical reasoning. I'm wondering now if we are ready to sum up the discussion." After a few moments, one of the group should volunteer or, if no one volunteers, one of the group should be asked to sum up the discussion. One of the group states the following: "It seems to me that all seven factors must be kept in mind when determining where a fire line should be located. One factor may be important in one fire, while on another fire it may be something else." Following this statement, the conference leader addresses the group by saying, "Are we pretty well agreed with the statement John Doe has just made, which in substance was 'all seven factors selected are of vital impor-
tance in judging where to locate a fire line. In some instances one factor will be the most important; in another, it may be something else. The thing we have to keep in mind in practice is not to give so much weight to one factor that we will overlook the importance of the rest."

3. The Problem Solution or Case method. This method of instruction consists of preparing problems, real or hypothetical, and presenting them, orally or in writing, to the group for solution. It has probably been developed and used more by the United States Army than any other training organization.

This method lends itself more to advanced than to initial instructions, since it is usually considered that the person must have some knowledge of the subject, acquired through training or experience, before he can be expected to solve problems encountered in connection with a job. (24)

Problems may be presented to the trainees in a number of ways; the usual methods are: (a) Oral presentation by personal contact. (b) Oral presentation by telephone. (c) Writing with or without sketches. (d) Enlarged photographs with explanations and statements. (e) Motion pictures and lantern slides accompanied by, or incorporating, a statement of the problem. (f) Under actual field conditions.

Whatever method is used for presenting the problem, there are two essentials: (a) All the data necessary to
solution must be provided and (b) the objectives to be attained by the trainee must be clearly stated.

There is a wide field for application of the problem method in connection with the District Warden's job. A partial list of subjects might include dispatching, fire suppression technique, calculating probability, law enforcement and public contacts.

To clarify the use of this method a sample lesson plan is included which was prepared by referring to (17) and (24).

The Problem Solution or Case Method Example

A dispatcher wishes to test a new lookout's ability to use his firefinder. The dispatcher selects a panoramic picture and compares the picture with his plotting board to determine the subdivision of a section, the section, township and range of a certain location. With the azimuth and vertical angle measured for a given area the dispatcher calls up the lookout and states his problem thus: "John, I would like to double check on your use of the firefinder. Here is a problem. There is a fire in the NW ¼ NW ½ of section 21, Township 12 South Range 6 West. I want you to give me your azimuth and vertical angle reading for this area".

With the problem already solved, the dispatcher is ready for the correct solution as soon as it is given. In
case a problem is not correctly solved, the trainer should
diplomatically explain that there is some mistake, then
carefully repeat the necessary data given and the objective
to be attained by the trainee; or an instructor may diplo-
matically explain that there is a mistake and have the
trainee repeat the solution step by step, with explanations
given for each step.

When the solution has been correctly solved, the in-
structor should give another similar problem to make sure
the trainee thoroughly understands the mistake he made in
the previous problem.

4. Training by Inspection method. This training
method is usually used on the job. Every member of an or-
ganization should be inspected at least once by the organ-
ization head or his authorized representative. Since
training goes hand in hand with inspection, every effort
should be made to point out to the man being inspected
that the inspection is largely for the purpose of giving
assistance, advice and instructions. (17)

The general purpose of all inspections should be: (1)
To compare the quality of the work with established stand-
ards. (2) To determine the underlying reasons for fail-
ures to meet the standards. (3) To determine and give ad-
ditional training needed. (4) To stimulate and inspire
the employee to better future performance. (17) and (24)
The United States Army is probably one of the greatest users of inspections as a training method. This organization believes that inspections and standards are so closely related that it is hardly possible to discuss one without considering the other, as standards are complementary to inspections. If an inspector and those he inspects struggle along without the semblance of standards, little or no instruction will be imparted to the man being inspected. (24)

The United States Army also believes that the subject of inspection and standards should be emphasized for the following reasons: (1) It is of far more importance in the execution of training than is commonly realized. (2) There exists a decided difference of opinion as to what kind of standards should be adopted. (3) The purposes and correct methods of inspections are often misunderstood. (24)

"Where inspections reveal that additional training is required to enable the employee to perform his job satisfactorily, it should be given before the inspector leaves the station. Unless this is done, the inspector has missed one of the finest of training opportunities and from the training standpoint has failed to redeem his responsibilities." (17)

One of the outstanding attributes of a good inspection is to stimulate and inspire an employee to better future performance. It is an opportunity to clear up any
misunderstanding and it is definitely up to the instructor not to leave the impression that he is merely there to find fault with the men, but rather to help them with any difficulties.

Inspection forms are primarily intended to serve as a guide for the best use of training time, planning and effective use of the time spent on the inspection. An inspection form serves as a reminder list to guide the instructor while preparing for and when giving an inspection.

The following sample form is suggested as an example of a usable procedure that might be followed for any man in any position. The form was devised from one similar used by the United States Forest Service.
### Inspection Outline

**Name:** John Doe  
**Position:** Lookout  
**Month:** June 29, Year: 1940

<table>
<thead>
<tr>
<th>Items of Inspection</th>
<th>Individual Self Inspection Date and Initials</th>
<th>Inspection by District Warden and Others Date and Initials</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A. Personal appearance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cleanliness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clothing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attitude</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. Appearance of Station</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cleanliness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Window</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surroundings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Efficiency</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tools and equipment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Placement of furniture</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5. **The Written Instructions method.** This method of training is an essential and effective method, but it may be easily abused. There is quite often a tendency to give long written instructions and then expect an employee to become familiar with the entire content of the written material. "Written instructions on how to do a job which has already been taught by more effective methods are valuable to the trainee as a means of review and future ref-
ference. (17) All reference material will need to be complete, clear and concise. The Fire Warden's Handbook, completed last spring by the State Forestry Department, has fulfilled a definite need as a source of reference. It is carefully indexed and the material can be easily referred to, but neither this manual or any other form of written instructions will give complete or adequate training to an employee.

Written instructions are usually superior to verbal instructions, but even the best written instructions may be misunderstood. Written instructions are most usable for stating policies or regulations. The following brief extract from the State of Oregon Fire Suppression Policy is all that is deemed necessary as an example:

"The approved protection policy of the State of Oregon calls for fast, energetic, and thorough suppression of all fires in all locations. When immediate control of all fires is not thus attained the policy then calls for prompt calculating of the problems of the existing situation and probabilities of spread and organizing to control every fire within the first work period. Failing in this effort, the attack should be planned without reservation to have the fire under control by 10 A.M. of the next morning."

6. The Lecture method. This method consists merely of written instructions given verbally and, for training pur-
poses, it is a method of imparting information to a group or to an individual person who does not have the information. This is the last method for instruction that is to be considered and it has been found to be the least desirable of all training methods, therefore, it should be used the least. (17)

The lecture, when used as a method of instruction, is divided into two steps. In the first step, the instructor passes out the information; in the second step, he requires that the information given be reproduced. The instructor may carry out the second or test step by asking questions which may be oral or written, or by requiring the members of the group to restate, in their own words, the substance of the lecture. This lecture method is most suited to advanced groups whose additional attainments have already familiarized them with this procedure. (17)

A lecture may be strengthened by the use of any one of the following: (a) the use of illustrations, (2) taking notes on the lecture, (3) printing or mimeographing copies of the lecture. (17)

The lecture method of group training is perhaps one of the least effective and the most abused methods in use at the present time, however, if the speaker can develop an interesting talk, adhere to his subject, present a limited number of ideas at a given time, and make it concise and
brief he can teach effectively. (17)

It has been recognized that to be effective the lecture requires as much or perhaps more preparation than some of the other training methods. The preparation time usually increases as the presentation time decreases. (17)

Because lectures are merely written instructions given verbally a sample lecture is not included, but as an aid to preparing a lecture the following points are recommended: 1. Note down all items that may be included in a lecture topic. 2. Select the three or four important topics that are considered to be the most important. 3. Analyze and prepare separately each of the three or four major topics selected. 4. Plan for strengthening the lecture by the use of illustrations, require that notes be taken, or print or mimeograph copies and pass them out after the lecture. 5. Prepare test questions to be asked orally, or to be written out.

There is certain limited use for the lecture in connection with group or individual training for the purpose of giving a person certain background information, for example, an understanding of the protective organization, its makeup and objectives may be presented by the use of the lecture method.
SUMMARY

It has been suggested that there are three types of instruction; namely, group, individual, and telephone training. It has also been suggested that there are six methods of teaching; namely, the four-step, conference, problem solution or case, inspection, written instruction, and lecture. The types and methods discussed should all be of value for teaching fire control work.

The use of the three types of instruction is summarized as follows:

1. For group instruction the four-step, conference, problem solution or case, and lecture method of instruction should be the most effective.
2. For the individual training, the four-step, inspection, problem solution or case, and written instruction methods should be the most usable.
3. For telephone training, the problem solution or case method should be the most effective.

The use of the six methods of instruction is summarized as follows:

1. The four-step method has been found to be the best to use while imparting new information to unskilled men. These four steps are: preparation,
presentation, application, and test.

2. The conference method is best used with a group of men familiar with the subject to be taught. This procedure enables the group to evaluate and weigh important evidence. The phases or steps in the development of a topic by conference are: assembling facts, selecting the facts which bear directly on the problem, evaluating these facts, and decision or conclusion.

3. The problem solution or case method lends itself to more advanced instruction. The two essentials of this method are: (a) providing data necessary for solution and (b) giving the objectives to be attained by the trainee.

4. Training by inspection method may be used on the job for either experienced or inexperienced men. The three steps or phases of this method are: (a) preparing the inspection outline (b) contacting the men on the job to evaluate the trainee's ability and (c) determining training needs and giving additional training when needed.

5. The written instruction method may be used to state policies or regulations. It should be used primarily as a reference. The chief consideration should be that the instructions are complete,
clear, and concise.

6. The lecture method is best used to impart basic information to advanced groups who are familiar with the procedure. It may sometimes be used to impart background material to inexperienced men. Lecture, when used as a method of instruction, is divided into two steps which are: (a) the instructor passes out the information and (b) he then requires that the information given be reproduced.
INTRODUCTION

Objective: To suggest a practical procedure for measuring the fire control training accomplishments of all trainees.

Several methods are now being used by the United States Army as a check on training accomplishments. Chief of these are test situations, inspections, and written examinations. The specific purpose for this determination, according to the United States Army, is to see if the training is comprehensive, practical and adequate; that the instructing personnel is suitable and effective; and that it is systematic and thorough. (24)

The essential elements or points found necessary by the United States Army for carrying out each of these methods are the preparation and presentation, the solution by the trainee and the discussion or critique of the solution. (24)
METHODS FOR MEASURING TRAINING ACCOMPLISHMENTS

To determine the adaptability of these "check training" methods, it is felt desirable to discuss each in detail.

1. Test Situations or Problems

The Army's use of this method generally takes place after a complete training program. In order to keep the training comprehensive, practical and adequate, the Commander personally supervises the preparation of a test situation and its execution. Every effort is made in the preparation of a situation to have it as practical as possible. This situation is then presented to the men in a form of a military order, either orally or written out. The problem or situation is then carried out on maps or in the field by the entire command. At the conclusion of the test a discussion or critique is held to point out correct and incorrect methods of execution. During the critique an effort is also made by the Commander or instructor to see that the essential elements have been thoroughly covered. (24)

The test situation may be used for measuring job judgment, technical knowledge, and tactical or doing ability. It can be applied to most of the men to measure their knowledge of many of their principal duties. This may be carried out on the ground or with paper problems just as the
2. Inspections

The specific purposes of all Army inspections are to promote and ascertain (a) efficiency of training and instruction (b) the battle efficiency of units (c) battle efficiency of officers (d) readiness of command for active field service. Then the Commander wishes to determine whether the training for which he is responsible is progressing satisfactorily, he himself, should do the inspecting. The inspection should be so controlled by the Commander that he will know at first hand just what progress is being made. (24)

The medium for the inspector in determining progress of training is the minimum standard and objectives set forth in War Departmental mobilization training schedules, augmented by authorized manuals, Technical Regulations, Tables of Basic Allowances and other official publications regarding training. (24)

In making these tactical inspections, the items of inspection may be divided into those of condition and those of performance.

c. Insistence that property or equipment be present, serviceable, clean, and in good condition, not only complies with regulations regarding care of government prop-

orty, but fosters disciplinary and morale training and teaches subordinates what to look for during these inspections.

b. Proficiency in drill, drawing, draft, and the like, and in tactical exercises are items of performance.

3. Written Examinations

Written examinations are most commonly used for non-commissioned officers to measure their knowledge of a subject which may be required for promotion. This same use of written examinations is also made for measuring Reserve Officers' knowledge of a subject given in correspondence lessons. (24)

The usual practice for correspondence instruction to Reserve Officers is to send the trainee a series of lessons called a sub-course. Reference texts are provided as an aid in preparing these lessons. Each lesson must be prepared and mailed in for a satisfactory or unsatisfactory rating. A satisfactory rating must be secured for each lesson. When all lessons in the sub-course have been completed, a written examination, covering the entire sub-course, is given. This written examination must be passed with a grade of at least 70. This written examination is the only means the Army instructors have for measuring, by correspondence, a Reserve Officer's knowledge of a subject. (23)
The United States Army has found test situations, tactical inspections, and written examinations to be the most practical and effective methods for measuring training accomplishments. It is, therefore, the plan in this section to discuss the use of these methods for this training program for protection employees. This plan should enable the measurement of the trainee's tactical or doing ability, technical knowledge, judgment, understanding of the entire organization and morale. The results of this measurement could also be used to select men for promotion.

1. Test Situation

To illustrate how a test situation on the ground or on the job may be applied, let us assume that a test is to be made of a warden's ability to locate fire lines under a given situation. To make this test situation it would first be necessary to lay out the fire on the ground. This might be accomplished by scattering flour or some other conspicuous material on the ground to represent the fire's edge. Then a verbal or written description of the situation can be given to complete the problem, before action is taken by the warden. This information should include the weather conditions, number of men and fire-fighting equipment available in a given time. The warden or trainee is
then ready to perform the test. He may do this by blaring a line around the imaginary fire's edge. When he has completed his work, a decision or critique may be held.

To illustrate how a test situation with paper problems may be applied to the same assumption made in the foregoing example, the first step might be to have a map, preferably topographic, with the fire line drawn upon it. Then the situation would have to be described in more detail to give the essential elements. It would be desirable to include in this description the fuel type, main point of spread, weather, number of men and fire-fighting equipment available. The warden could then plot his line location on the map and give an oral or written explanation of his actions. His solution could then be discussed and constructive criticism given of the solution by the instructor.

2. **Tactical Inspection**

An inspection may be made of each individual on the job at any time during the fire season. Both items of condition and performance may be determined during these inspections.

Inspections have already been discussed as a method of training, but they also have a distinct use as a means of measuring training accomplishments. While making an inspection, the measurement of a trainee's tactical or doing ability, technical knowledge, job judgment and understand-
ing of the entire organization may be determined by asking questions or requiring manipulative performances.

To facilitate the inspection it is desirable for the inspector to use a reminder list of the principal duties of each job. This reminder list is of value because it enables the inspector to prepare a comprehensive list before the inspection which will serve as a guide during the inspection for a thorough and complete test of each man's ability. By referring to this list and taking notes as the inspection proceeds, a written record should be complete.

To illustrate this reminder list, the following is given as an example actually used by members of the State Forester's Staff while inspecting the protection personnel throughout the state:

**Inspection Check List for Lookout**

A. **Personal Appearance:**

1. Cleanliness
2. Clothing (If meeting the public he should have a presentable uniform)
3. Attitude (whether attitude appears good toward superiors, public, C.C.C.'s work)

B. **Appearance of Station**

1. Cleanliness  
   a. windows  
   b. bed  
   c. floor, etc.
2. Efficiency
   a tools and equipment
   b placement of furniture in L. O., etc.

C. Performance

1. Condition of firefinder
   a solid base
   b level
   c map oriented with finder
   d instrument oriented with country
   e instrument oiled, etc.

2. Ability to use fire finder
   a horizontal angles
   b vertical angles
   c distance

3. Ability to read the map
   a township
   b range
   c section
   d subdivision

4. Knowledge of country
   a local landmarks
   b legitimate smokes
   c false smokes
   d roads and trails
   e habitations, etc.

5. Condition of other equipment
   a firefighting outfit in shape ready to go

6. Operation of fire danger station

7. Routine followed on the job
   a check looks
   b time of report
   c time for cooking and eating
   d time for getting water, etc.

To obtain maximum value from the inspection, the inspector should give instruction to the trainee by discussing the strong and weak points found during the inspection.
It would be desirable to encourage questions by the trainee on specific standards of efficiency or any other points relating to the job.

3. **Written Examination**

The written examination is adaptable for some job requirements on all positions. Chief of them might be testing individual men or groups of men for technical knowledge and understanding of the entire organization.

Further to illustrate the use of the written examination, the following is an examination actually given a group of Forest Service employees at the conclusion of a group training school. A few minor changes were made to have it fit the state organization.

**FIRE TRAINING SCHOOL EXAMINATION**

1. Why should the fire protection organization be highly trained and efficient: To protect valuable commercial timber ____ to save grass lands for grazing ____ to protect the esthetic values at stake ____.

2. Spot fires are started more often by burning humus ____
   down logs ____ standing snags ____ camp fires ____.

3. Back pack pumps are used principally to: build fire line ____ wet down the ground around camp ____ mop ____.
up—drinking purposes—.

Fill in the blank spaces.

4. A type cover map indicates the _____ of the forest.

5. A visibility map indicates the _____ and _____ areas of the forest from a lookout station.

6. A pump chance map indicates where _____ is available for forest fire protection.

Check proper answer.

7. Which of the following fires is the most dangerous?

Ground fire _____ crown fire _____ spot fire _____ surface fire _____.

8. Directing of crews on the fire line is the responsibility of the District Warden _____ Patrolman _____ Warden _____ Foreman _____.

9. A protractor is an instrument to determine distances on a map _____ to determine the elevation of points _____ to determine the degree of an angle on a map _____.

Fill in correct blank space.

10. Logs across the fire line should _____ should not _____ be removed.

11. Overhanging limbs across fire line should _____ should not _____ be cut.

12. Burning snags should _____ should not _____ be felled.

13. Logs inside of a fire line on a hillside should be placed with the contours _____ perpendicular to the contours
14. Hot embers on a hillside may be prevented from rolling across a contour fire line by increasing width of line ___, building steps on line ___, by making a trench ______.
15. Roots extending across fire line should ____ be cut off.
16. Fire line should ___ be dug to mineral soil.
17. A fire is safe when controlled ___ when completely out ___ when corralled ___.
18. A fire may ___ be left unattended at night.
19. Travel to a fire should ___ be attempted at night.
20. A fire is at its lowest ebb at noon ___ middle of the afternoon ___ middle of the morning ___ early in the morning ___ early in the evening ___.
21. Which is the greatest cause of fires blowing up when they are under control? Check one. Not enough men ___ failure to mop up ___ relative humidity ___ wind ___ failure to dig trench to mineral soil ___.
22. Of the following check the statement which is correct:
   Relative humidity is the percentage of the amount of moisture in the air at a certain temperature in rela-
tion to the amount it could hold ___. Travel time is the interval between the detection of a fire by a look-out and the time the fireman gets there ___. The duty of a look-out is to dispatch all firemen to fire ___.

23. A blind area is: an area from which you cannot see out ___. An area into which you cannot see ___.

24. If a lookout thinks he sees a fire, but is not quite certain he should: (check one) Phone for dispatcher immediately ____ wait until he is able to see more clearly ____ go and investigate fire immediately _____

25. A kertick tool is most effective in rocky country ___
   to cut trees ___ to rake up deep humus ___ to back fire ___.

26. A pulaski tool is most effective to remove rocks ___
   rake back humus ___ cut roots ___.

27. There are ___ square feet in an acre.

28. There are ___ feet in a chain.

29. There are ___ feet in a mile.

30. There are ___ chains in a mile.

31. Fire tools should be quickly sharpened before going to a fire ___, immediately after a fire is cut ___.

32. A contour interval represents: the vertical distance between contours ___ length of contours ___ height above sea level ___.

33. Declination refers to: the line of sight from a look-
out to a fire ___ the angle which the compass needle makes with the true meridian ___ the direction in which a compass needle points ___.

34. A section of land contains ___ acres.

35. There are ___ sections in a township.

36. If a fire is reported about 2 o'clock in the morning, a fire crew should: not be sent until morning ___ at regular work call ___ leave immediately for the fire ___ eat breakfast before going ___.

37. Members of the flying squad should leave camp whenever they please ___ when they secure permission from the District Warden ___ when they secure permission from the Warden ___.

38. Fire reports should be made out immediately after a fire is out ___ ten days after the fire is reported ___ whenever it is convenient ___.

39. When a fire is out crews should leave as they please ___ when the Army wants them in camp ___ when the District Warden gives them permission to leave ___ when the boys feel that they have worked long enough ___.

40. If a man is injured on the fire line he should: keep it to himself ___ report to the foreman in charge ___ leave the line immediately and go to camp and report to the doctor.
To obtain the maximum value out of a written examination, it would always be desirable to have a discussion or critique of the examination by the trainer or trainee after the papers have been corrected and returned to the trainee.

SUMMARY

Summarizing, may it be said that the United States Army has made effective use of the test situation, inspections and written examinations. The essential points or elements needed for preparing and presenting each of these methods are the preparation and presentation, the solution by the trainee and the discussion or critique. A plan was suggested for the use of each of these methods for measuring the protection employees' accomplishments after training has been given.

The procedure for each method was briefly as follows:

1. Test situation
   a. Situation prepared and given to the trainee in an oral or written form.
   b. The situation is solved by the trainee on the ground or on maps or paper.
   c. A discussion or critique is held by the trainer with the trainee or trainees.
2. Inspection
   a. A check list is prepared and used during the inspection.
   b. The trainee performs activities or answers questions given by the trainer.
   c. A discussion or critique is held by the trainer and trainee to clear up any weakness or questions.

3. Written examination
   a. A written examination is prepared and given to the trainee.
   b. The trainee answers the questions.
   c. A discussion or critique is held after the examination has been corrected.

If the above suggestions as to procedures are followed by the trainers it is felt that the objective of this chapter will be fulfilled.
CHAPTER VI
CONCLUSION AND RECOMMENDATIONS

INTRODUCTION

Objective: To propose a practical plan for initiating this training program to the District Wardens.

The general program proposed for planned training of the District Warden's employees was developed in five different chapters. The first chapter suggested a practical procedure for selecting the subject matter for fire control training or what should be taught to protection employees. The next chapter was devoted to suggestions for determining who should be taught. A plan was proposed for training men to increase their efficiency on a particular position and training to prepare qualified men for promotion. The chapter on "How To Teach" suggested practical methods for teaching fire-control duties to protection employees. The last chapter, "Measuring Training Accomplishments", suggested a practical procedure for measuring the fire-control training accomplishments of all trainees.

In the chapter on "Suggestions For Selecting What To Teach", the training material was classified into the essential elements for efficiency on the job. These were
disciplinary and basic information, technical knowledge and tactical or doing ability.

The plan suggested for selecting what to teach was in three steps; namely, (1) Analysing each of the five positions with the headings for basic or disciplinary technical and tactical duties, (2) Listing all important duties for each position under the three headings mentioned in Step I, (3) Analysing each of the listed duties to break them down into the necessary operations to accomplish. These steps were followed while preparing the material included as guide or reference information.

The District Warden could, by referring to the suggested steps and reference information listed, prepare similar lists to be used for selecting what to teach.

In the chapter on "Suggestions For Determining Who Should Be Taught", two plans were proposed. The first was for selecting men who should receive training to improve their performance, and the second proposed a plan for training men for promotion.

The first step in Plan I would involve determining the efficiency of each employee by referring to the job lists prepared in the chapter on "What To Teach", then listing the deficiencies of each individual in a form similar to the one suggested in the text. With the individual's deficiencies summarized by position, a decision could be made as to
whether individual or group training was needed.

The first step in Plan 2 would involve making training available to all men interested in and capable of being promoted. The next step suggested that training for promotion be given to the capable men, a record kept of their progress and, after test or examination, the best qualified men would be promoted when an opening was available.

In the chapter "Suggestions on How To Teach", the essential elements of all teaching methods according to the United States Army were: (1) Preparation by the instructor; (2) explanation or presentation; (3) application by the trainee and (4) examination or test.

Three types of instruction were proposed in the plan—group, individual, and telephone training. Then six methods of instruction were suggested. These were the four-step, conference, problem or solution case, inspection, written instruction and lecture. Sample lesson plans were included for each method of instruction to further clarify the use of these methods.

In the last chapter, three methods were suggested for measuring training accomplishments. These were: test situations or problems, inspections, and written examinations. The essential elements found necessary by the United States Army for carrying out each were preparation and presentation, solution by the trainee, and a discussion or critique.
The plan proposed for the use of each of these methods involved the following of the above-mentioned essential elements. Illustrations were given for each method of measuring training accomplishments to better clarify the plan.

RECOMMENDATIONS FOR INITIATING PROGRAM

To carry out the proposed planned training program for the protection employees of the State Forestry Department, it is recommended (a) that a full-time personnel and training men be employed on the State Forester's Staff, to direct all training activities; (b) that the District Wardens be assembled at a group school to study and prepare for this training program, and that the training officer contact each District Warden at his field headquarters after the group meeting, to assist him in the preparation of his training plan.

The training officer should have the following qualifications: (1) Be thoroughly familiar with fire-control activities; (2) familiar with the job requirements of all protective positions, and (3) be thoroughly familiar with training methods.

At the District Wardens' meeting, the men will need instruction on (a) how to select what to teach by making job analysis of each protective position, (b) how to de-
termine who should be taught, by analyzing their employees' doing abilities and matching these abilities against the job requirements, (c) how to select and use the types and methods of training by preparing lesson plans for each method, and (d) how to develop a means for measuring training accomplishments by using these methods.

To facilitate this initial District Wardens' meeting on the proposed training plan, a complete program for the meeting is included here, together with lesson topics, the time devoted to each, and the method of teaching each topic included. Recommendations and comments are also made for each of these topics.

1. The Program for the District Wardens' Meeting

<table>
<thead>
<tr>
<th>Lesson Topic</th>
<th>Time</th>
<th>Method of Teaching</th>
</tr>
</thead>
<tbody>
<tr>
<td>(First Day)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Introduction</td>
<td>8:30-9:00 (1/2 hr.)</td>
<td>Lecture</td>
</tr>
<tr>
<td>2. What are the Protection Positions in Your District?</td>
<td>9:00-10:00 (1 hr.)</td>
<td>Conference</td>
</tr>
<tr>
<td>3. What are the Chief Duties for the Position At Your District?</td>
<td>10:00-12:00 (2 hrs.)</td>
<td>Conference</td>
</tr>
<tr>
<td>4. What are the Operations or Detail Jobs Necessary to Carry out Duty At</td>
<td>1:00-5:00 (3 hrs.)</td>
<td>Conference</td>
</tr>
</tbody>
</table>
(Second Day)

5. How to Prepare for and Teach the Four-step Method

(Third Day)

6. How to Prepare for and Teach the Conference Method

7. How to Prepare for and Teach the Problem or Case Method

(Fourth Day)

8. How to Prepare and Teach with the Inspection Method

9. How to Prepare and Teach with the Written Instruction Method

10. How to Prepare and Teach by Lecture

(Fifth Day)

11. The Various Types of Instruction

12. How to Prepare for Group Instruction

(Sixth Day)

13. How to Prepare for Telephone Training

15. Closing Talk and Comments
1. The Introduction's objective should be to outline briefly the procedure to be used and sell the idea to the group.

2. The objective to standardize the titles of the various positions. This would be done by having the groups select and agree on the titles by using the conference method.

3. The procedure for this topic would be to explain to the group how the topic is to be developed and have them select a position they would like to analyze more in detail. Objective -- to illustrate how to make a job analysis. Conference method should be used again.

4. Objective: To illustrate further how to make a complete job analysis. This could be done by again using the conference method. The group should first be asked to select a particular duty they would like to analyze. Then this duty should be analyzed and broken down into operations or detail jobs necessary to accomplish.

5. Objective: To train the group in how to prepare and use the Four-step Method. This would be done by using the Four-step Method. This might be done by presenting Step I, Preparation and Step II, Presen-
tation. Then break the group into smaller groups of four or five for Step III, Application and Step IV, The Test. Each individual in the smaller groups would prepare a lesson and present it to his group by using the Four-step Method.

6. Objective: "To train the group on how to prepare and use the Conference Method." This could be done by using the Four-step Method and following the same procedure as in 5.

7. Objective: To train the group on how to prepare and use the Problem or Case Method of teaching. This could be done by using the Four-step Method and the same procedure followed as in 5.

8. Objective: To train the group on how to prepare and use an Inspection as a method of teaching. Again this could be done by using the Four-step Method and the same procedure followed as in 5.

9. Objective: To train the group on how to prepare and use the Written Instructions Method of teaching. Use the same procedure as in 5.

10. Objective: To train the group on how to prepare and use the Lecture Method of Instruction. Use the Four-step Method and the same procedure as in 5.

11. Objective: To acquaint the District Warden with the three types of instruction; namely, group training,
training on the job, and training by telephone. This would be presented by a lecture and mimeographed copies would be distributed to the group.

12. Objective: To help the District Warden prepare for a group school. This could be done by outlining the fundamental or basic steps and then have each man prepare a basic model.

13. Objective: To prepare the group so that they are able to give instruction on the job. The Four-step Method would be used and each individual would need to prepare and give an actual lesson.

14. Objective: To train the group on how to use telephone training. The Four-step Method could be used and each man should work out and give his demonstration.

15. Objective: To have the group leave with an aim to initiate a training program in their own district.

3. Recommended Plan For Follow-up

The training officer, in his contacts with each District Warden in the field, should help prepare (1) job lists for each position; (2) group, individual and telephone training; and (3) lesson plans for each method of instruction. In addition, he should help on the group school by assisting with the programming, selecting and training in-
struction, assigning teaching topics, and preparing individual lesson plans.

CONCLUSION

It is hoped that the procedure proposed in this thesis will be of value as a reference to the State Forestry Department in the preparation of a systematic, planned, state-wide in-service training program for all protection employees.
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DEFINITIONS OF FIRE-CONTROL TERMS

1. **Fire Control** is defined as "the entire group of activities including prevention, suppression and suppression, aiming to reduce the number of fires and their spread, and to confine the area burned to an acceptable minimum at the lowest possible cost." (13)

2. **Prevention, Fire.** The attempt to reduce the number of man-caused fires by the proper use of education, law enforcement and hazard reduction. (13)

3. **Law Enforcement** is the reduction of the occurrence of man-caused fires by enforcement of the existing forest laws. (13 or 20)

4. **Education** is the reduction of chance of probability of man-caused fires by the use of planned public contracts. (20)

5. **Hazard Reduction** is the reduction of the changes of fire starting and spreading by the removal of dangerous fuels. (20)

6. **Presuppression.** The effort in time and money incident to the organization, instruction, management, maintenance, and equipment designed to provide for effective
work by temporary employees, cooperators, and other agencies depended upon for fire suppression. Includes all fire-control activities between prevention and actual fire suppression. (18 or 20)

7. Detection. The effort made before a fire starts to be able to accurately see, locate and report immediately any fire that might start. (18)

8. Transportation. The effort made before a fire starts to enable men and equipment to reach a fire in as short a time as possible. (18)

9. Communication. The effort made before a fire starts to efficiently link together the entire organization to insure proper correlation. (18)

10. Equipment Supplies. To have adequate material properly distributed, and usable when a fire starts. (20)

11. Personnel. The effort made to have adequate men organized, trained and assigned to prevent and control fire. (18)

12. Pre-suppression Coordination. The effort made to provide adequate additional men, equipment and supplies and transportation to insure prompt and efficient control of fires in times of worst peak loads. (20)

13. SUPPRESSION, FIRE. All work of extinguishing a fire, beginning with its discovery. (18)
14. **Finding the Fire.** All the activities after a fire starts, by which an organization places men, equipment and supplies on the fire's edge. (21)

15. **Initial Action.** The activities of a man or crew who first arrive on a fire. On a small fire this would usually be actual suppression. On a large fire it is usually the activities necessary before corral action starts. (13)

16. **Corral.** The activities necessary to complete a line around a fire by means of which the advance of the fire is checked as stopped. (13)

17. **Mop Up.** Is the act of putting all fire out within a dangerous distance from the fire line and eliminating the possible avenues of fire escape. (13)

**CLASSIFICATION OF THE POSITIONS**

To determine what to teach, it will be desirable to classify the positions. There is some variation in the employee classification in the sixteen protective units in the State Forestry Department.

To eliminate confusion of terms and misunderstanding, the following classification of workers is suggested as a standard for the Department:
1. **Flying Squad Member.** An employee, usually a new man, who works **directly** under a warden on presuppression and suppression activities.

2. **Lookout.** An employee stationed at a high point which enables a man to see and report fires when they originate.

3. **Patrolman.** An employee located at a certain station, whose chief job is moving about a given area by foot, horse or car, looking for fires. He usually travels through areas not visible to a lookout. His chief job is to find and report fires and suppress small fires. He seldom has charge of more than three or four men on a fire.

4. **Warden.** A man responsible for all activities in a specified area. He issues burning permits and directs the activities of fire fighters in his district. He would not as a foreman or sector boss on large fires. He is the key man in the area in which he is located.

5. **Dispatcher.** A member of the fire-control organization, usually at the District Warden’s Headquarters, who receives reports of discovery and status of fires, determines location of fires and sends men, supplies and equipment to suppress fires.