FIREMAN'S GUIDE

REGION ONE

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE

1940

(OAKLAND-6-25-40-3,000)

Action Required:

1. He finds on the map, Porcupine Ridge, Bear Mountain and Harris Mountain.
2. He then draws a straight line through Bear Mountain and Harris Mountain on the map and extends it to intersect Porcupine Ridge on the map.
3. This line passes through Coyote Pass on Porcupine Ridge. The fireman's location is, therefore, at Coyote Pass.
4. His map can then be oriented by the method described in Problem 9.

PROBLEM 11

Locating position on map with compass and protractor.

Condition:

Fireman does not know his location on map or on ground, but can identify two or more topographic features which are shown on his map.

Action Required:

1. Sets up compass and obtains bearings on both known features. (Selects two which nearest approach a 90 degree angle if possible.)
2. Converts compass readings into back azimuth.
3. Places center on hub of protractor over exact location of target with zero degree to north on map (0 degree and 180 degree line on protractor must parallel north and south line on map.)
4. Makes pencil dot on map to indicate where back sight crosses edge of protractor. Extends straight pencil line from target (on map) through dot indicating back sight.
5. Repeats procedure on second target. Point where lines intersect indicates exact position of fireman on map.

FIREFINDERS—DESCRIPTION AND USE

The firefinder is the instrument which the lookout uses to locate fires which are discovered from his station. Four kinds are in use.

Orienting Firefinders:

In orienting, first see that the mapboard is level and have the north end approximately north.

Place left edge of the alidade against the pin indicating your position on the map with the same edge passing directly over an accurately located peak. Move the board on the base until the line of sight, through the alidade, passes through that point on the ground. Clamp the straight-edge snug against the edge of the mapboard. The board is now in orientation as to that one peak, but should be checked by swinging the alidade until the left edge passes directly over another selected peak and sighting to see if that peak is intersected by the line of sight. The orientation must be checked on at least two peaks, and the differences, if any, compensating by splitting the amounts of error.

The principle of orienting maps with all firefinders is the same. The Bosworth and Osborne map bases and sights may be moved independently and each clamped when necessary by means of set screws.

The ranger will designate at least three peaks at each lookout which have proven reliable for orienting the mapboard. The names and bearings of these established

points must be posted in each lookout and must always be used in orienting the mapboard. He will also require that an orientation mark be established inside the lookout house and map or margin on firefinder designated so that the orientation can be easily accomplished during haze and fog, or at night.

Koch Finder:

The Koch firefinder has a base board supported by a post or tripod. The mapboard sits on the base board which is fitted with a straight edge against which the edge of the mapboard is placed. The straight edge is loosened at one end by a set screw and moved when orienting the mapboard. The map has an azimuth circle drawn on it and an 18 inch common alidade is used to take readings on fires.

Weholt Finder:

The Weholt is similar to the Koch finder except that the alidade is pivoted in the center of an azimuth circle on an Xylonite cover and the cover adjusted over the map so that the center of the azimuth circle is directly over the lookout point.

Bosworth Finder:

The Bosworth finder is all metal. The map is mounted on a round metal base and has the azimuth circle on a brass rim around the outer edge. The lookout point is the exact center of the azimuth circle.

Sights extending above the base at the rim are supported by an arm that rotates freely around the metal pedestal supporting the map base. They are connected across and above the map by a fine wire which intersects the lookout point in the center on the line out of sight.

The pedestal is set on a sliding base so that the whole map may be moved to avoid obstructions to sight. The map base rotates on the pedestal for orientation purposes and is clamped in any position with a set screw.

Osborne Finder:

The Osborne finder consists of a wooden base board fitted with steel tracks upon which the metal map base sits and may be slid to one end or the other to avoid obstructions to sight.

The map base of metal is round, and the sights are set in a metal rim around the outer edge, with the rear sight at zero of the azimuth circle. The metal rim is the azimuth circle, graduated in degrees and half degrees, and rotates around the map base. Readings are taken when graduations on the azimuth circle are in alignment with a vernier set in the base at the south side of the board.

The map is always mounted so that due south falls at zero on the vernier.

The sights are connected across and above the map by a light steel tape set on edge which intersects the lookout point in the center of the board. The tape is graduated in miles for determining distances on a half-inch map.

The rear sight has a sliding peep and the front sight two cross hairs for taking vertical readings. The rear sight is graduated in degrees for obtaining vertical readings. Instructions for taking vertical readings are stamped in the metal of the rear sight. The peep intersecting the upper cross hair gives a plus reading, the lower a minus. The vertical reading is not required except in special cases, which will be covered by detailed instructions from the ranger.

The Alidade:

The alidade is a ruler, with sights attached at the ends, used to sight various objects, usually fires. In sighting, either for readings on the azimuth circle or in orienting the mapboard, the left side of the ruler represents the line of sight and is placed against a pin inserted in the map at the exact point where the lookout is located. Using the left side prevents any of the degree numbers on the left being covered up. The sights on the Bosworth and Osborne firefinders are not primarily alidades and will be referred to as sights.

The 18-inch alidade is used with the Koch firefinder. The alidade used on the Weholt finder is pivoted in the center of an azimuth circle on an Xylonite cover which is placed on the map with the azimuth circle centered at the lookout point. The left side of the forward end of the alidade is cut out so that it coincides with the line of sight.

The rear sight on alidades and lookout boards have a lengthwise slot to look through, while the front sight is open with a hair, wire or thread stretched vertically through the center. Whatever material is used it is called the hair. The hair in the front sight must always be taut and straight.

Azimuth Circle:

The azimuth circle as used on lookout maps is a complete circle of 360 degrees, usually graduated in degrees and half degrees. Every 10th degree is numbered, the numbers proceeding clockwise around the circle.

The circle is drawn or placed on the map with its center exactly at the lookout point and graduated so that a north and south line through the lookout point passes through the zero and 180 degree marks, the east line intersects 90 degrees and the west line falls across 270 degrees.

In sighting a fire, after orienting the map, the alidade or sights are adjusted until the hair splits the location of the fire. Then by reading the degree number where the left side of the alidade (or the wire or tape connecting the sights) intersects the azimuth circle on the edge toward the fire, the bearing or azimuth reading of the fire is obtained.

The azimuth circle on the Forest Service smokechaser compass is graduated to 360 degrees but is numbered from zero or north, counter-clockwise. This arrangement facilitates obtaining readings that coincide with those taken at the firefinder, and will not be confusing after one has been trained in its use.

SEARCHING FOR FIRES

Adequate knowledge of territory and complete description of the fire location reduce search time. *When the vicinity of the fire is reached and the smoke is not seen:*

Check again on location given you and topography indicated.
Look for your landmark, previously picked out.
Climb a tree and look for smoke. Get back sight if possible.
Find a point where back sight may be taken on the lookout point and get on the line of the azimuth reading.
Search area each way along this line from reported location of fire.
Systematically cross section the area.
Smell out smoke by wind direction. Listen for crackling of fire.
Cross to another ridge or slope and look back.
Determine your own exact location on map by use of compass, map and protractor.

Do not mill around aimlessly in the area where the fire is supposed to be. There is little chance of finding the fire in this way. Take advantage of every opportunity afforded by topography to look around. Watch for ash flakes on leaves, logs, etc.

GRIDIRON METHOD

When the approximate location of a fire is reached, and the above methods of search have proved futile, a slower but more systematic method must be adopted. This is known as the compass gridiron method and comprises the systematic cross-sectioning of the area in which the fire is reported. For one man alone this means traveling in a nearly straight line from one side of the area to the other, offsetting to one side and traveling back to the end of the area from whence he started. The offset should be the distance which will permit his observation to slightly overlap the strip seen on his previous trip. This procedure is continued back and forth across the area until the searcher has assured himself that no fire exists in the territory covered, or until the fire is found.

When more than one man undertakes to gridiron an area, the person in charge places each man on a line facing the area to be searched, and proceeds as specified for the lone fireman. To avoid circling, which is inevitable on steep ground in heavy timber, the leader should carry a compass line throughout each crossing of the area. The spacing of crew members is regulated according to the density of timber or the difficulty of observation encountered.

While the organization and conduct of this method requires some time, it is the only known method by which we are assured that the entire area has been observed by a searcher.

ESTIMATING AND MEASURING AREAS OF FIRES

Everyone who extinguishes a fire must report the area of it. In order that areas of fires may be reported accurately, the following points should be kept in mind:

43,560 square feet	1 acre
10 square chains	1 acre
1 chain	66 feet

All land measurements or surveys are computed on a basis of horizontal or level distances. On slopes the difference between slope distance and horizontal distance varies with the steepness of the slope; the steeper the slope the greater the difference. Due allowance should, therefore, always be made for this difference when measuring up the area of a fire. A good way to check yourself on pacing steep slopes is to use a short stick of known length, five or six feet long, hold it in a horizontal position against your body and make a mark with the other end on the ground in front of you, then pace to this mark, measure again with the stick, standing on the first mark; repeat this operation up the hill.

The edge of a fire is generally very irregular and the shape is usually such as to discourage accurate measurement. However, small burned areas can be classified as circles, squares, triangles or rectangles, and as such staked off to be measured.

Some burned areas will be outside the area staked off to be measured and some unburned areas inside, but in staking out the area try to balance these up as nearly as possible.

The circular method of measuring areas is the easiest to use, if it can be applied. Having determined the boundary of a circle of the approximate area of fire, pace off the radius (distance from center to edge of circle). The following table gives

radius lengths from small fires of sizes most frequently handled by smokechasers:

A circle with a radius of 37 feet covers 1/10 acre.
A circle with a radius of 53 feet covers 2/10 acres.
A circle with a radius of 59 feet covers ¼ acre.
A circle with a radius of 64 feet covers 3/10 acre.
A circle with a radius of 83 feet covers ½ acre.

If the burned area more closely resembles a square or rectangle, mark out a boundary for it, balancing unburned area within your line with burned area outside. When satisfied that the area within your lines is of approximately the same size as fire, pace off the length and width of the area. *Measure these in chains* and multiply. This will give you the area in square chains, and as there are ten square chains in one acre, you will get the area in acres by dividing by ten.

Main Points to Remember:

1. Do not guess on area of fire. Measure it on the basis of a circle, triangle, rectangle or square.
2. If circle, measure radius (diameter from center to line) in feet and use table. Make note of length of radius if table does not give area for the radius obtained.
3. If square or rectangle, get the length and width in chains. Multiply these and divide by ten to get area in acres.
4. All fires less than 1/100 acre should be reported in square feet; larger fires in square chains or acres.
5. The average man steps about 2½ feet on level ground. Determine your length of pace on various slopes by actual measurement.
6. For squares and rectangles obtain length and width in chains. One chain—66 feet.
7. Length (in chains) x width (in chains) divided by 10 equal area in acres.

Estimating Perimeter of Fire From Lookout:

Occasionally the lookout is requested to estimate the perimeter of a fire a considerable distance away. This can be done by two methods:

First: By use of firefinder he can measure horizontal width (the cross-wide dimension). With this as a comparison gauge, he estimates the other dimension (the one extending along his line of sight). This gives him a square, rectangle, triangle or circle.

Second: When a firefinder is not available, estimate the height of trees in or adjacent to the fire. Then use these as comparison gauges. Ten trees wide, etc., and convert this to feet or chains to obtain dimensions.

A rule of thumb to be used on average fires is as follows:

The area in shape of a square:

Multiply length of one side by 6. If unusually irregular edge, multiply by 8.

For rectangular area:

Add width plus length and multiply by 3. Multiply by 4 if very irregular.

For circular area:

Compute circumference and add 50%. If very irregular double circumference.

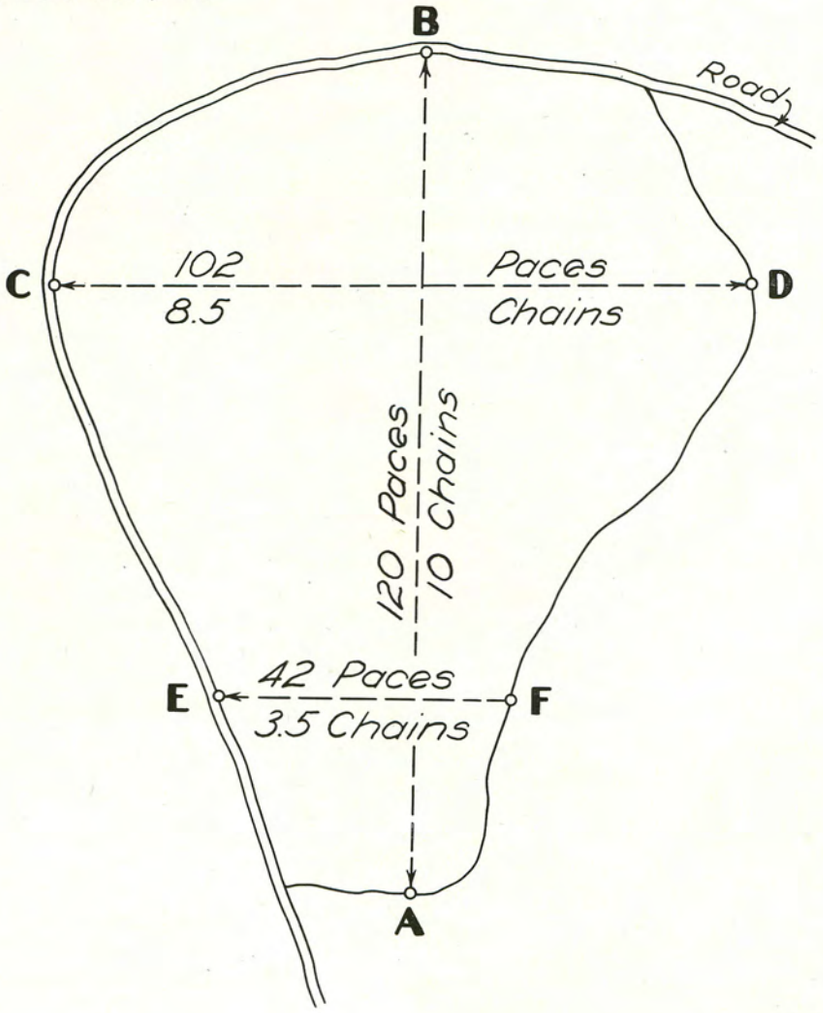
The above rules of thumb may be used by firemen to estimate the perimeter of fires when they first reach them. Such an estimate is required on the fireman's report.

PROBLEM 1

To determine acreage of fires 0.1 acre and over.

Condition:

The fireman, after his crew has mopped up the fire, walks around and through it to size up its general shape. While doing this, he keeps in mind that he wants to get its average dimensions by pacing distances, to be used in figuring out the acreage burned to enter on his fireman's fire report. He has previously practiced pacing over a marked course of a chain and has found that he takes twelve paces (double steps) to the chain on average ground. He draws a rough sketch of the shape of the fire on a notebook sheet, thus:



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Action Required:

He decided that the length of the fire is about the same any way it might be measured, so he paces the length following the line indicated as A-B on the sketch. He records the number of paces on his sketch, which, in this case, is 120 paces; or 120 divided by 12 equals 10 chains. He then paces across the widest portion of the fire approximately at right angles from his lengthwise paced distance; and records 102 paces, or 8.5 chains, as indicated by line C-D on the sketch. Going down to the other end of the fire, where it is the narrowest, he paces this distance and gets 42 paces, or 3.5 chains, which he records for the distance E-F. He then follows the steps listed below to determine the area:

(a) The average width equals the sum of the two measurements divided by 2.

3.5 chains—width of fire at E-F.

8.5 chains—width of fire at C-D.

12 chains—sum.

12 divided by 2—6 chains, average width.

(b) The area in square chains equals the average width times length.

6 chains—average width from step (a).

10 chains—average length.

6 x 10—60 square chains—6 acres.

Methods apply to 0.1 acre and larger.

PROBLEM 2

To determine the area in square feet of fires less than 1/10 of an acre.

Condition:

Guard gets a length of 14 paces and width of 7 paces.

Action Required:

1. Convert paces into feet, based on number of paces he takes to the chain.

Example: 12 paces—1 chain.

1 chain—66 feet.

Then one of guard's paces—1/12 of 66 feet—5.5 feet.

2. Multiply length in feet by width in feet, which gives number of square feet.

Example: (a) One of guard's paces—5.5 feet.

(b) Length 14 paces. 14 x 5.5—77 feet.

(c) Width 7 paces. 7 x 5.5—38.5 feet.

(d) Area of fire in this example:

Width x length—area.

77 x 38.5—2964 square feet, which should be rounded off to 3000 square feet for the report.

(Caution: A fire 10 feet by 10 feet is sometimes spoken of as "fire 10 feet square," but its area is 100 square feet.)

RECORDING LIGHTNING STRIKES

1. Mount a strip of thin white cardboard over map and under the metal azimuth rim and allow to extend 1¼ inches inside of the azimuth rim. Pencil lines in direction of lightning strikes with time and distances, will be recorded on this strip.
2. Upon appearance of a lightning storm, see that firefinder is ready.
3. Have clock in position for reading from finder.
4. Face storm across firefinder and point sights in direction of storm.
5. Have pencil in writing hand ready for action.
6. When a strike appears quickly line up sight, draw line on cardboard strip toward the strike along line of sight, and record time to nearest half minute.
7. When storm has ended ascertain azimuth, time of each strike and location of each strike and report to dispatcher.
8. By platting azimuths of strikes reported for the same minute, the dispatcher can obtain intersection locations and thereby quite accurately locate the strike.
9. Thunder is simultaneous with the lightning at the location of the strike, and sound travels one mile in approximately five seconds. If a clock or watch cannot be read directly for number of seconds between strike and sound of thunder, the period may be determined by counting from time of strike until the thunder is heard. By beginning the count, thir-teen, four-teen, fif-teen, etc., and by practicing and checking with the clock, satisfactory accuracy is attained.
10. Assuming the count started at thirteen when the lightning flash was seen, and ended at forty-two when the thunder was heard, subtract twelve from forty-two, which leaves thirty, or number of seconds. Divide thirty by five and you have six, or the approximate number of miles from the observer to location of strike. Scale off six miles in direction of strike and you have approximate location of strike. (The reason for starting the count at thirteen is that all numbers above thirteen have two or more syllables, and count of such numbers requires about one second.)
11. The method for determining distance from observer along a line of sight to the strike permits any single lookout, or the dispatcher, to locate a strike by use of an azimuth and scale. This method is also a very good check against the use of two or more azimuth readings and the intersection method.
12. Generally, location of lightning strikes are calculated by the dispatcher who uses two or more azimuth readings from different observers on the same strike. These readings are platted on a map and the location of the strike is determined to be at the intersection of these lines. The correct location will be reported back to the lookouts concerned.

INSTRUCTIONS FOR AIR DELIVERIES TO FIRES

SELECTION OF SITE (ON THE GROUND) FOR DROPPING OPERATION

1. Select a spot easily described. If possible, it should appear different than immediate surroundings. Peculiar topographic or vegetative features serve well as identification marks. Examples: Grass meadow, small clump of green trees, an alder thicket, rock slide, high point on ridge, etc.
2. Select site behind or alongside the fire, not under smoke drift.
3. First choice, ridge top; second, a wide, straight valley bottom; and as last resort, use sidehill.

DESCRIBING SITE

1. Positive identification of the exact site is necessary and can be accomplished through a carefully written description including:
   (a) Quarter section, section, township and range.
   (b) Whether ridge top, saddle, valley bottom or sideslope.
   (c) Major landmarks; forks of stream, proximity and direction of outstanding features, lakes, peaks, saddles, etc.
   (d) Direction and distance from main fire.
   (e) Exact description of marker to be used.
   (f) Character of ground cover, old burn, meadow, rockslide, etc.

MARKING SITE

1. A white cross made by two strips of cloth, paper or flour two feet wide by ten feet long, placed on open ground or on top of bushes, reproduction or weeds, serves best. Fasten it down with rocks, stakes or string to prevent disarrangement by wind or dropped packages.
2. When cloth, paper or flour are not available, use signal smokes as follows:
   (a) Build two fires sufficient to throw smoke above tree tops, one to be 100 feet on each side of dropping site.
   (b) Locate at right angles to wind to prevent smoke from merging as one.
   (c) Have fires hot at least one-half hour before plane is to arrive.
   (d) When plane is heard, place green boughs on fire to increase smoke volume.
   (e) Keep smokes going strong until last package is dropped.
   (f) A man waving a white cloth at the dropping site will expedite identification of the correct location.

RECEIVING PACKAGES

1. Station one or two alert men on vantage points preferably protected by a large tree or sheltering rock near the marker (within 300 feet) to record the location of bundles dropped. Each should carefully count the bundles as they are released to insure against loss.
2. Bundles may be dropped with or without parachutes. Do not permit ground crew to be on dropping site until plane signifies it has completed dropping. It is dangerous. Never station men *below* dropping site on steep ground.

REQUESTING AIR DELIVERY

1. When ordering air delivery always report the following:
   (a) *Complete* description of dropping site as listed in "Describing Site" and "Marking Site."
   (b) Time delivery at site desired.
   (c) Size of outfit desired—in multiples of five-man units. Standard cache units are for twenty-five men, but special outfits will be prepared when ordered.
   (d) Whether equipment, beds, subsistence or all are required.
2. Afternoon orders for air delivery must be received in Missoula in time to permit ships to return before darkness of night arrives. Best conditions for dropping prevail during morning hours or before 2:00 p.m.

3. A report indicating the condition of equipment and supplies delivered will be sent to the office of fire control as soon as convenient after the dropping is done.

INSPECTION

One of the most important phases of fire control administration is inspection. By inspection is meant the check-up and measurement of performance and facilities. Inspection is necessary to discover weak points in organization and things, and to prescribe means by which such inadequacies may be corrected. Likewise, inspection is designed to disclose things which are better than standard in order that such betterment may be put into general practice, and to make possible assignment of credit for outstanding performance.

Inspection is the responsibility of every person directing the action of another, or others, in any phase of fire work. It extends on through every position up to the chief's office. Each officer responsible for the performance of others must inspect the activities of his subordinates to ascertain whether instructions are being adhered to, and to measure results. Inspection must be highly exacting and impersonal in nature. It must be human and must be constructive if it is to be effective. Every inspection should have as its goal the objective of making the inspectee better qualified to do his work and to raise the standard of both morale and production. The inspectee can greatly increase the value of inspection by voluntarily presenting his problems, mentioning the parts of the job which cause him difficulty and asking questions.

The following summary of inspection practices should govern all fire inspections in the region:

1. Inspection will be exacting and thorough, but must not be such as to antagonize or tend to tear down.
2. The purpose of inspection is to assist inspectee in correcting faults rather than to criticize as matter of discipline.
3. Training must be kept in the foreground of all inspection, and can be accomplished by demonstration, drill and discussion.
4. Inspections to be constructive must not be routine, mechanical or stereotype. They must consider local influences and elements.
5. Outlines should be used as guides, or reminder lists, but must not be allowed to make inspections routine.
6. Copies of inspection reports or memoranda will be left with the inspectee, and should be discussed between inspector and inspectee.
7. Self-inspection by guards is essential as a weekly check-up on preparedness and performance.
8. Inspection should take nothing for granted. Examine, drill, test and instruct. Leave nothing to chance that can be definitely measured, or provided to make the job standard in quality.

Standard Region One inspection forms are shown on following pages.

GUARD'S WEEKLY SELF-INSPECTION CHART

(To be used by all guards in checking their station.)

A. Personal.

1. Appearance.
   Clean.
   Neat.
   Shaven.
2. Personal equipment required.
   (a) Watch.
      Keeps correct time.
      Checked daily.
   (b) Correct footwear and work clothes for firefighting.
      Suitable.
      In repair.
   (c) Uniform, hat and badge.
      Standard.
      Presentable.
   (d) Knife.
   (e) Food supplies.
      Sufficient for specified period.
      Needs listed.
      Orders placed.
      Properly stored.
   (f) Personal illness or injury reported to ranger.
   (g) Fire pack (Fire equipment).
      Adequate.
      Contents checked and complete in accordance with forest standards.
      Replenished after use on fire.
      Ready to take to fire.
      Water bag soaked.
      Canteens.
        Condition of cover.
        Condition of cap.
        Full of water.
      Backpack pump.
        Full of water.
        Does it leak?
        Gasket in cap.
        Does pump work freely or is barrel gummy?
        Shoulder straps O.K.
        Condition of hose.
      First aid kit complete.
      Cutting tools sharp.
        Handles tight.
      Candles wrapped in paper.
      File wrapped in paper.
   (h) Diary or daily log.
      Proper form.
      Up to date.
   (i) Job list
      Supplied.
      Followed.

B. Station Buildings and Grounds.

1. Appearance and sanitation.
   (a) Interior neat, clean, orderly.
   (b) Windows clean.
      Towels or clothing hang over windows.
   (c) Dishes washed and put away.
   (d) Stove polished.
   (e) Bed made neatly—aired.
   (f) Garbage can clean.
   (g) Grounds clean and neat.
      Woodpile stacked — 2 weeks supply.
      Chips raked up.
      Trash, cans, rubbish disposed of currently.
   (h) Extra supplies neatly shelved and racked.
   (i) Manure disposed of currently where horses or livestock kept.
   (j) Garbage pit.
      Used.
      Cover tight.
      Disinfected.
2. Fire prevention.
   (a) Stovepipe.
      No holes.
      Joints and elbows tight.
   (b) Spark arresters.
      On chimneys.
      In repair.
   (c) Stove boards.
      Under stove.
      Between stove and walls.
   (d) Woodbox.
      No rubbish.
      Away from stove.

(e) No fires started with kerosene or gasoline.
Matches in glass or tin container.
(f) At least 5 gallons water on hand.
(g) Roof and gutters and behind chimneys clean of leaves and needles.
(h) Hazards cleared from around all buildings.
(i) Gasoline and oil stored outdoors away from buildings.

3. Improvements and facilities.
(a) Water system.
Adequate—clean.
(b) Station fences, corrals and gates.
Stock tight.
In neat repair.
(c) Other station buildings, sheds, etc.
Weather tight.
Theft proof (kept locked).
Needed repairs listed on job sheet.
(d) Station signs and posters.
Replaced when necessary.
(e) Lookout lightning protection.
Good condition.
(f) Flag.
Put up in morning.
Take down in evening or when leaving station.
Needs replacement.
Flag pole firm, but not set on building.
Rope satisfactory.
Rope tied to avoid loss of end through top pulley.

C. Transportation.

1. Automobile or truck.
(a) Motor clean.
(b) Oil proper level in crank case.
(c) Radiator full of water.
(d) All tires in good condition.
(e) All tires inflated.
(f) Spare tire in good condition and inflated.
(g) Tools to change tires.
(h) Gasoline tank full.
(i) Brakes effective.
(j) Lights will work.
(k) Battery charged—full of water.
(l) Recently greased.
(m) General condition.
(n) Required firefighting tools, including filled canteen and emergency rations, in car.
(o) Located for quick getaway.

2. Horses or mules.
(a) Good condition.
(b) Shod—shoes tight.
(c) Kept up during specified hours.
(d) Equipment.
In repair.
In place.
Saddle and blanket clean.
Ready to go.

D. Equipment.

1. Backpack pump.
(a) Full of water.
(b) Does it leak?
(c) Gasket in cap.
(d) Does pump work freely or is barrel gummy?
(e) Shoulder straps O.K.
(f) Condition of hose.

2. Canteens.
(a) Condition of cover.
(b) Condition of cap.
(c) Full of water.

3. Gasoline lantern.
(a) Is bowl tight and without makeshift plug?
(b) Does pump work?
(c) Are mantles O.K.?
(d) Spare mantles.
(e) Spare generator tip.
(f) Tools for lantern.
(g) Extra fuel available.

4. Tool grinders.
(a) Are they worn out of shape?
(b) Are they cracked?
(c) Condition of mandrel.

5. Files.
   (a) Are they worn out?
   (b) Handles provided.
   (c) Supply adequate.
6. Headlamps, electric.
   (a) Batteries in container.
   (b) Batteries in container shielded.
   (c) Condition of cord.
   (d) Spare bulb.
   (e) Will lamp work?
   (f) Extra battery supply.
7. Improvement tools.
   Check same as for fire equipment.
8. Osborne and Bosworth fire finders.
   (a) Oriented with respect to topography.
   (b) Sights plumb.
   (c) Sighting hairs tight.
   (d) Map oriented with respect to azimuth graduation.
   (e) Fire finder level.
   (f) Condition of map.
   (g) Carriage oiled.
   (h) General condition of instrument.
   (i) Orientation record posted and available for use.
9. Telephone.
   (a) Connections tight.
   (b) Protection blocks clean.
   (c) Telephone call chart up.
   (d) Ground O.K.—soldered.
   (e) Remote telephone switch O.K.

SPECIAL FIRE CONTROL EQUIPMENT

Recognition must be given to the importance of equipment in fire control work. Even the most highly skilled worker is ineffective without equipment. He is partially effective if his tools are partially adequate. He is fully effective only when provided with suitable tools. The region provides the best equipment available, since experience has taught that men are only as efficient as the tools they work with. Furnishing good equipment is only one important step in preparedness. Proper care and condition of these tools throughout their life is the second and perhaps most important part of the equipment problem. The finest axe is worthless when dull. A sharp axe is useless when it flies off the loose handle and lands inside the fire. Each employee is personally responsible for keeping equipment placed in his charge in the best possible condition. With facilities now available, there is no excuse for poorly conditioned equipment.

Following are some of the common things to do and watch for in caring for equipment:

Inspect each item before fire season. Test each item. Check against standard list for completeness. Keep in units. Use signs to distinguish. Store for: convenience in quick loading, minimizing possibility of mix-up in loading out, protection against weather, rodents, theft. Maintain in neat, attractive condition at all times. Business-like appearance of equipment builds morale and cultivates interest.

FIRE OUTFITS

Equipment and mess outfits in Region One are standardized to avoid confusion during inter-forest use. Prepared ration units are likewise standardized. Errors in transmitting and interpreting requisitions are reduced by using one common name for each particular unit. Dispatchers are required to use names defined in the following glossary: