Lumbering in National Defense

THESIS

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INTRODUCTION

It is not the intention of this paper to present a learned, theoretical discussion of the material covered by the various parts, but rather to point out, in a simple style, the great need of wood in any scheme of national defense.

The writer has had considerable experience, both in peace and active operations, with wood as applied to the needs of the Army, and has had the opportunity to make rather complete observations on methods used by the French, British and German Armies, as well as those employed by the United States Army.

Under parts I and II, it is not the intention to cover all items of the use of wood for military requirements, as such a discussion would, of course, fill several volumes. It is intended, however, to point out some of those essentials without which an Army in the field could not function, as an indication of the enormous need for this class of material by our troops when in active operations.
PART I

IMPORTANCE OF WOOD IN THE SCHEME OF NATIONAL DEFENSE.

Aside from the actual use of wood by the armies in the field, a much greater need is felt for this material in the zones of supply,—in the case of the late war,—in the United States. This need falls, naturally, into two classes,—commercial war requirements, and purely military requirements.

Commercial War Requirements:

It must be realized that when a nation dedicates its entire resources to the prosecution of a war, that anything which affects public utilities and production has a definite value in the success of the campaign. Not only must our public utilities and production be maintained, but they must be greatly augmented to meet the increased demands of the usual duties, and, in many cases, so reconstructed to enable them to meet almost fabulous demands for special duties. This augmentation and reconstruction means an actual, rapid physical construction, usually of a temporary nature, necessitating an enormous drain on our wood and iron resources.

Our iron resources and factories for the fabrication of steel must be reserved, as far as possible, for the requirements
of the armies in the field. These requirements, regardless of increased production, have never, in the history of any previous war, been fully realized. It is then a crime against the soldiers in the field to deny them the full use of metal resources, when other material can be used for construction purposes. The answer is, that wood and the lumber industry must be used to the fullest extent for this class of war activity.

That our government realized the need of reserving the metal resources and industries of the nation for the requirements of our armies in the field, is evidenced by the enormous use of wood, even at prices in advance of metal, in the construction and maintenance of our temporary and permanent war structures in the zone of supply. Some of the most important, among the numerous items in this class, for which wood could and should be used, are:

1. Temporary factories.
2. Houses for civilian war workers.
3. Railroad requirements.
4. Ship building requirements.
5. Sewage and water pipe.
6. Road structures,— bridges, culverts, etc.

etc

In addition, non-essential industries should be controlled with a view to non-diversion of essential metals from the requirements of the armies, using wood in lieu thereof.
Military Requirements in the Zone of Supply:

Next in importance to commercial war requirements, in the part wood plays in the scheme of national defense, comes the requirements of the military in the zone of supply, or zone of initial training, which are usually identical.

In a country with a military policy such as was ours before the war, the problem of raising armies, properly caring for and equipping them, is almost beyond human comprehension. The role that wood plays in this zone falls into two classes, that used for the care of the troops, and that used in the manufacture of military equipment.

Wood used for the care of troops:

One of the most important features in the care of troops is that proper shelter be given them. The old idea of placing an army "under canvas" has been, for once and all, proven inadequate during the past war. Especially is this true in zones great distances from the enemy, usually where troops are first mobilized for training. These troops must be provided with comfortable quarters to insure efficiency in training. But, on the other hand, due to the speed at which such shelters must be constructed, they must be of a temporary nature. The answer is again, Wood.
The importance of this material in this zone, for this purpose, can readily be understood by reviewing the following items which are absolutely essential for the welfare of troops undergoing instruction, and which should be constructed of wood:

1. Barracks
2. Mess halls
3. Latrines
4. Stables
5. Riding halls
6. Amusement halls
7. Sewage and water pipe.
8. Water Tanks
9. Walks
10. Furniture
   etc

Use of wood in the Zone of Supply for military equipment:

In this class, wood is usually an essential and not a substitute. Its physical properties, particularly that of strength combined with lightness in weight, are extremely important elements in the mobility of an Army in the field. The specifications for wood used for military equipment are usually very exacting,—in most cases special species being required for different articles of equipment. As an example of this, rifle stock specifications
require manufacture from Walnut. During the late war this one item, due to the lack of Walnut stock, caused considerable embarrassment and delay in the manufacture of rifles until the situation was relieved by the Boy Scouts of America, who made a reconnaissance of shade trees, etc. throughout the Central States, thus securing sufficient material to enable the manufacturers to continue full production.

Items of military equipment, for which wood is essential, are, in part:

1. Combat wagons
2. Escort wagons
3. Motor vehicle bodies and parts
4. Aeroplane stock
5. Rifle and pistol stocks
6. Field wire spools
7. Artillery and wagon wheels
8. Caissons
9. Limbers
10. Surveying instruments
11. Ammunition and spare parts boxes
12. Crates
13. Litters
14. Light railway stock
15. Wood bullets (for new type blank Machine gun ammunition.)
16. Bayonet scabbards
17. Tent pins
18. Tent poles
19. Medical chests
20. Tools and tool handles
21. Pontoons
22. Prepared bridge material
23. Machine gun and automatic rifle parts.
25. Ramps
26. Barbed wire spools
27. Saddle trees, stirrups, etc.
28. Picket pins
30. Water carts
31. Trench mortar carts
32. Rolling kitchen bodies
33. Powder containers
34. Field desks and equipment
35. Signal equipment
36. Gun tompions.

etc.

The above partial list is an indication only of that equipment, partially or wholly, manufactured from wood, which troops in the face of the enemy must be supplied with. It does not include the
common field engineering material, which is usually prepared by troops in the field. This class of equipment will be discussed below.
PART II

DETAILED USE OF TIMBER AND WOOD BY THE ARMY IN ACTIVE OPERATIONS.

The employment of timber and wood by the army in active operations, exclusive of the manufactured articles of equipment, divides itself into three phases; the first two are tactical in principle, and the third administrative, as follows:

1. Use of growing timber for protection and defense.
2. Problems of field engineering dependent on wood.
3. Firewood.

Use of growing timber for protection and defense:

PROTECTION:

The tactical value of growing timber for the protection from enemy observation of troop concentrations, is beyond computation. It means secrecy of operations as well as actual physical protection.

In the late war our Army was particularly fortunate in having adequate protection of this nature in the immediate vicinity of battle positions in all of our major operations.

The attack on the ST. MIHIEL Salient was an excellent example of how troops can be concentrated, in the immediate vicinity of the enemy, with absolute secrecy, where protection from enemy observation is adequate. Nearly one million troops were concentrated on this front, within easy range of hostile artillery, during the few days just preceding the initiation of the offensive, but movements were so conducted that the enemy did not suspect
anything until the night preceding the assault. What made this possible was the fact that the forward areas were well wooded. Thousands of troops, pieces of artillery, wagons and other impedimentia moved into the forward areas each night, but early morning always found a "quiet sector", the troops, etc. having been safely secured from enemy observation in the many patches of woods, where they remained throughout the hours of daylight. With the coming of darkness, the whole countryside would be swarming with troops once more. And so on, each night and day, until the concentration for the offensive had been completed.

The physical protection afforded troops by standing timber is not so much protection from projectiles and fragments as it is protection from enemy observation. Even though the enemy may know that troops occupy a certain patch of woods, it is extremely poor tactics, and prohibitively expensive in ammunition to "strafe" the woods in hopes that they might kill some of the opposing troops. Artillery must have a definite object at which to fire, and such strafing would, of course, be a matter of guess work and trusting to luck. The result is that fewer casualties occur among troops when secured under protection of woods than when camouflaged in colonies in the open, or in the trenches.

DEFENSE:

During the latter part of the war, ideas of defense changed from the old idea of defending a continuous line of
trenches, to the principle of defending a line of important points on the terrain by defending each point with a ground organization known as a strong point. The location of these strong points was so selected that each flank was covered by fire from other strong points.

Of all favorable points for the location of such strong points, woods were by far, other features being equal, the most favored, due to the fact, mentioned above, that they afford absolute protection from enemy observation, thus presenting an almost prohibitively expensive problem for adequate artillery preparation. The truth of this statement can readily be seen by reviewing American offensives and recalling to mind those places which will go down in history as places where the most terrible fighting occurred; such as, Belleau Woods, Bois Quart de Reserve, the Argonne Forest, Bois de Loge, Bois de Brieulles, etc., etc. Had our army been on the defensive, these woods would have been of as great value to us as they were to our enemy, and the terrible price we were required to pay for their capture would have been theirs to bear.

Problems of field engineering dependant on wood:

Problems of field engineering, in the face of the enemy, are, at best, extremely difficult. If there be a lack of material or a lack of transportation facilities, these difficulties are greatly increased. Transportation in the forward areas, due to the lack of road space, is always an extremely serious problem.
and generally results in only material of the first class
(ammunition, food, etc) being received by the troops engaged.
when this condition arises, engineering material must be ob-
tained in the area of combat. With the exception of a small
percentage of captured material which can be converted to the
use of the attacking troops, all such material must be secured
by exploiting the timber resources of the vicinity.

In the late war, the Germans made a very detailed
study of the exploitation of timber in the invaded areas, and
through this means greatly reduced the drain on the timber re-
sources of Germany and the strain on their transportation
systems. That the enemy fully realized the value of timber
in the forward areas is indicated by their attempts to destroy
standing timber, orchards, etc. in all their retreats, thus to
deny our troops the benefit of this essential material.

The following is a partial list of those articles,
used to aid, protect or comfort troops in the face of the enemy,
which usually must be made by the troops themselves from timber
resources of the immediate vicinity:

1. Fascines
2. Hurdles
3. Gabions
4. Timber revetment material
5. Duck boards
6. Rifle racks
7. Ammunition recess lining
8. Grenade containers
9. Dugout timbers
10. Grenade protection frames
11. Wire entanglement posts
12. Cheveaux de frise
13. Abatis
14. Palisades
15. Temporary bridge material
16. Rafts
17. Gun emplacement timbers
18. Bomb proofs
19. Road and trail material
20. Culverts
21. Drains
22. Grave markers, etc.

Firewood:
This material is, of course, an absolute essential in the proper care of troops. The amount consumed by an Army is tremendous. In the rear areas, firewood is secured by special forestry or Quartermaster Corps units and distributed to the troops, but in the forward areas this material must be secured by the troops on
the field. It was not an uncommon sight, in some of our offensives, to see soldiers cooking with captured, slow-burning powder, due to the absence of wood.
Due to the lack of shipping space for the supply of American lumber to our armies in the field, special units were organized and sent to France for the purpose of cutting French timber for our use. What these units produced in the 81 American mills operating by October 1918, is indicated by the following official table:

189,564,000 ft. b.m. Lumber
2,728,000 Standard Gauge Ties
923,560 Narrow Gauge Ties
2,739,000 Poles and pit props
38,200 Piles
247,500 Cords firewood.

The amount of timber cut and consumed by the troops in the forward areas can never be computed, but probably would be from five to ten times more than that given in the above table.
PART IV

RECOMMENDATIONS FOR WAR RESERVE

In view of our past experiences which show the value of wood (in some cases particular species) in any scheme of national defense, it is the firm conviction of the writer that military timber reservations should be established in each territorial department of the Army (see map attached), including such reservations in our insular possessions.

Features which should be observed in the establishment of military timber reservations are:

1. Securing proper species
2. Strategic requirements
3. Production of full war requirements
4. Accessibility to transportation and shortest possible hauls to points of manufacture.

The securing of proper species, in some cases, is a paramount consideration, as, for example, the Sitka Spruce for the manufacture of aeroplane stock. The securing of this stock in the late war can also serve to show the need of establishing routes
of transportation into regions from which Army war supplies must come. With the lack of proper transportation to convey full requirements of special and general species, the situation forced on the armies in the field would be extremely embarrassing and might prove disastrous.

National forests, and Forest Service administration are of little value as such a reserve, due to strategic conditions and the general rule of inaccessibility. Military timber reservations should be administered by, and used for, the Army only, both in times of peace and times of war. During times of peace, timber could be cut from such reservations, by special forestry units, for the peace time requirements of the Army, or for public sale.

Special forestry units, which will always be an essential part of our Army when in active operations, require special training to meet military requirements. The administration of such tracts by these units, in times of peace, would insure this training.

It is the belief of the writer that such a scheme for the establishment and control of military timber reservations should be promoted in the interests of national defense.
The photographs which follow are mostly photographs showing American lumbering activities in France during the Great War. They are all official photographs, and have been secured with considerable difficulty and expense.
Aeroplane photograph showing destruction of forest by Artillery Fire. In the Argonne. 1918.
Aero-plane photograph showing destruction to forest by Artillery Fire.

In the Argonne

1918
Aeroplane photograph showing destruction to forest by Artillery fire.

In the Argonne.

1918.
Loading logs on French flat cars.
Camp St. Eulelie, Bordeaux, France.
1918.
American sawmill and yards.
Camp Pleyres, Bordeaux, France.
1918.
Unloading logs at American sawmill.
Camp Sabres, Bordeaux, France.
1918.
Interior of American sawmill
at American Hospital Center, Mars, France.
1918.
Loading ties at American Sawmill, Vagney, France.
1918.
Bringing in logs by wagon.
Grande Brosse, France.
1918.
Interior of American sawmill, Vagney, France, 1918.
British troops logging in France.
1301.
American cut piling on French flat cars.
Camp St. Eulelie, Bordeaux, France.
1918.
American sawmill and yards.
Camp Sabres, Bordeaux, France.
1918.
Bringing in logs by horsepower
Near Vagney, France
1918
24469
Log train and yards at American sawmill.
Barricos, Bordeaux, France.
1918.
Log chute and flume to lake at American sawmill.
Camp Boon, Bordeaux, France.
1918.
Splash dam at American sawmill.
Camp Broquette, Bordeaux, France.
1918.
American sawmill.
Bains le Bains, France
1918.
Loading piling on trucks.
Brouvelieures, France.
1918.
American logging railroad 72% grade.
Near Granges, France.
1918.
American sawmill at Grande Brosse, France. 1918.
Firewood for American Forces.
Camp Pleyres, Bordeaux, France.
1918.
American sawmill camp
Mortumier, Forestry
Depot, Gien, France.
1918.
American sawmill and yard.
Camp Kellogg, Bordeaux, France.
1918.
Hauling logs to mill by motor truck.
Bains le Bains, France.
1918.
Bringing in piling by motor truck.
Mortagne, France.
1918.
Hauling logs to mill by wagon.
Near Vaquey, France.
1918.
Loading logs for the mill.
Near Vagney, France.
1918.
American sawmill
Pontex, France
1918.
Portable American sawmill.
Gien, France.
1918.
Lumbering at Camp
Mortumié, Gien, France.
1918.
American sawmill No. 2.
Pontex, France.
1918.
Bringing up timber for gun emplacements.
Peronne, France.
1918.
Log station in forest.
Near Vagney, France.
1918.
Logs ready for the mill.
Levin, France
1918.
Loading ties for the front.
Domgermain, France.
1918.
American loggers camp in woods.
Near Granges, France.
1918.
American sawmill.
Bains le Bains, France.
1918.
Trainload of American cut lumber on way to front.
Barricos, Bordeaux, France.
1918.
American mill and yards.
Camp Sabres, Bordeaux, France.
1918.