

The Relation of Forest Production and Use to National Defense

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It has become a truism that modern warfare is largely **war of production**. Behind the military front, the real test of strength is the ability of a warring country to maintain its supply of many different commodities of normal, peacetime production; and to correlate their use for the maximum degree of national economic strength.

One of the first and continuing requisites of warfare in the modern mode is the quick need for troop housing in mass quantities; for all the other forms of shelter that go with the concentration of men and material; and for packaging immense quantities of goods. During the participation of this country in the World War of 1917, the Army and Navy required over 6 billion feet of lumber in the United States. Three billion feet were used directly for troop housing; 2 billion feet for boxes and crates; 750 million feet for shipbuilding; and 500 million feet for miscellaneous military items—gun stocks, artillery wheels, docks, etc.

During its less-than-18-months' operation in France, the American Expeditionary Force required some 600 million feet of timber. The great bulk of this went into cantonments, warehouses and hospitals. Operations at the front required quantities of railroad ties, road plank, heavy plank and duck boards for the dugouts and trenches. The supply bases required piling and heavy timbering for docks and the lumber items used in the enlargement of railroad facilities.

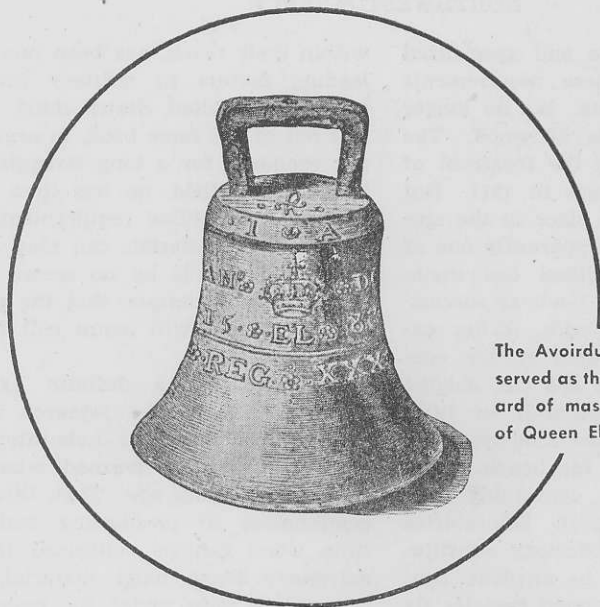
The National Defense program of 1940 has called, to date, for approximately 1½ billion feet of lumber. Close to a billion board feet will be used in constructing the cantonments necessary to bring the men in military training up

to approximately one million soldiers. 1500 board feet per soldier is the figure used for permanent barracks; and 800 feet per soldier for tent encampments. The other half billion feet approximately has been required for naval air bases; for the extensive work in the Panama Canal Zone; and for the projects already begun in housing workers at navy yards, aircraft factories and other wartime industries.

The purchases of lumber to date probably represent not more than 40 per cent of the total that will be required to complete the National Defense as now planned. Next to troop housing, the largest single item will be the housing of workers at wartime industries, which is now estimated at a minimum of 75,000 family units. Another large item will be the improvement of municipal and other airports all over the United States. The construction of munitions factories themselves will require considerable quantities of lumber. No estimates have yet been made of what will be needed to equip the far-flung cordon of naval and air bases, which is to be created offshore in the Atlantic and Pacific.

As in the first World War, the great bulk of the lumber required is in the everyday building items—the Dimension, Sheathing, Flooring and Siding, normally manufactured in the largest quantities. It is indeed fortunate that the heaviest needs for National Defense are for these types of lumber freely produced in all forest regions of the United States.

It is interesting to note, however, that—for all the developments in metallurgical craftsmanship and in the assembly-line type of mass production—modern war has need for the technical



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qualities of high-grade and specialized types of lumber. These requirements are constantly changing. We no longer make artillery wheels of wood. The wooden ship is not in the forefront of defense today as it was in 1917. But still wood holds some place in the specialized arts of war. Apparently one of the reasons why England has maintained her fighting air fleets so successfully, against all the odds, is her extensive use of laminated spruce construction, whose parts are cut, shaped and glued up in thousands of little shops spread all over the country, down to one carpenter and his bench. With the uncertainty over continuing supplies of spruce, English laboratories have worked out satisfactory substitutions of Douglas fir in airplane construction, part by part; and Douglas fir airplane stock is becoming an important war item. The American Corps of Engineers, and its contractors, has been combing the Pacific Northwest for the needed quantities of pontoon lumber, of the greatest strength and resiliency our Douglas fir timber can afford. This is used in building emergency bridges, under fire if need be. And the bridge has got to take a 10-ton tank, charging into action at 40 miles an hour. There are substitute schedules in steel bridges; but for all requirements—several types of timber still hold the lead.

Another striking fact in the supply of military needs as we know them today, is the necessity for having substitute materials ready to replace a preferred material, when it becomes short in supply or more essential for some other purpose. As an illustration, some of the emergency additions to aircraft factories in California, designed in steel, have been built with timber framing and trusses because the timber could be had quickly and the delivery of steel would be delayed. The ability of German science to find an "ersatz", or substitute, for many materials lacking

within their reach, has been one of the leading factors in military preparedness. The United States must take a leaf out of the same book, in organizing our economy for a long struggle. And it is in this field, no less than in the immediate, first-line requirements, that forest-grown materials can play a very useful role. It is by no means inconceivable, for example, that the present world struggle will again call for the wooden ship.

Let me give a definite example. Largely through the research at the U. S. Forest Products Laboratory, the United States has learned what Germany knew years ago. That, through a combination of plasticizing and pressure, wood can be converted into an extremely dense, tough material, interchangeable with metal for many purposes hitherto undreamed of. One of them is for the fins of airplane propellers. All of which simply points to the obvious lesson that, for National Defense, even more than for peacetime economy, we should **know our wood** and what can be done with it. We need more, and still more, research on the technology of forest-grown materials.

It is not difficult to draw obvious conclusions on the Relation of Forest Production and Use to National Defense. The same characteristics that make forestry and forest-using industries efficient in times of peace—make them doubly efficient in the stress of national emergency. That is to say: well-established forest practices which maintain growing stock and continuing supplies of raw material; an industry with the capital resources able quickly to enlarge plant facilities for unexpected demands; and a fully-developed wood technology that can fit lumber and other products of the tree into whatever places they may serve for defense, either on the first line or in the reserves.