



Inspecting lumber at Prince Rupert to determine its suitability for aeroplane construction. During the war, the high character of this inspection, on which human lives depended, won universal commendation.

factor of safety to permit some defects in the material. In aeroplane construction, however, the reduction weight and wind resistance to the minimum is of such paramount importance that the size of each component must be so reduced that only flawless material can be used. The stresses are carefully computed for every portion of the various parts, and all unnecessary wood is removed as shown in the illustrations.

In addition to the ordinary defects recognized in lumber, "angling" grain is perhaps the most serious defect in aeroplane wood. By sawing parallel to the bark it is comparatively easy to get the grain formed by the annual rings to run straight, but there is a tendency for trees to grow in a more or less spiral form which causes the fibres to angle across the flat grain or tangential faces of sawn lumber. Except where the spiral is very slight, it is impossible to correct this by any method of sawing. On account of these specially rigid requirements, the percentage of any

kind of lumber that can be used for this purpose is very small.

#### Civil Aviation's Wood Needs.

Though with the cessation of the war the demand for wood for aeroplane construction has practically ceased, there is no doubt that commercial aeronautics will develop into a very important industry demanding large supplies of high grade wood. A great number of kinds of woods are used for different purposes, but for the framework of the wings and fuselage, spruce has been found the most suitable on account of its combination light weight, tensile strength, flexibility and resistance to shock and splitting. Of the American species, white spruce, red spruce and Sitka spruce have been found almost equally satisfactory, but the higher percentage of clear and the large sizes obtainable in the Sitka spruce make it by far the most important species.

The difficulty of securing sufficient spruce of the required quality led to