Building a Canadian Aeroplane

By Alfred Rubbra, Jr.

How a Modern Flying Machine is Put Together at a Toronto Factory.

The manufacture of aeroplanes in Canada has created a great demand for the finest quality spruce, ash, birch, oak and white pine. The proper quality wood is very difficult to procure and there has never been a great reserve supply at an aeroplane factory.

The wood must be of a straight grain and pass the many inspections of the government and the manufacturer. The spruce used in the aeroplane industry in Canada comes from British Columbia. The Imperial Munitions Board have opened large mills in the various timber sections of the province. The output of these mills is many millions of feet of lumber a month. They supply the British and Allied Governments as well as the Canadian Government.

Great care is exercised to prevent poor quality wood from getting through. The first inspection takes place before the log enters the mill and the wood is again inspected before being shipped. On arriving at the aeroplane factory the lumber is inspected and cut into different sized lengths as required. It is then piled very carefully to prevent warping. A slight warping cannot be avoided so this is allowed for in the cutting of the lengths.

In order to dry the lumber to atmospheric conditions it is placed in a kiln, which is heated by steam. The air in the kiln is kept humid to boil out the sap and acids. This process is called case-hardening. This is done by allowing some of the steam to escape from valves in the radiators. If the air in the kiln was perfectly dry the wood would not dry to the condition required in aeroplane manufacture. Ash, however, is an exception. It is not kiln dried. If it were the process would remove the properties required

Finding Wood Moisture

When the contents of a kiln are considered to be in the proper condition samples are taken by the inspector. These are weighed and put into a small furnace and dried absolutely. The inspector then weighes the wood again and is thus able to calculate the amount of moisture the wood in the kiln contains. If the result is satisfactory the contents of the kiln are taken to the mill. Many samples have to be examined to find out whether the wood is just from the river or has been piled for some time. In the mill it is cut into the required lengths for struts, beams for the wings, and the many other parts.

In the construction of aeroplane wings, spruce plays an important part. Great difficulty is experienced in getting the long beams necessary for the wings. The smaller pieces are not so difficult to obtain as the grain runs straight for short distances. One of the chief defects in the wood and the most treacherous because of the difficulty to detect it, is spiral grain, rammy grain and cross grain. The inspectors are, however, rapidly mastering it.

The ribs, which support the fabric, are in some machines made of spruce and are steamed and bent into the proper shape across a drum. In others they are supported by a webbing of white pine. The snow skids which are used in the winter in place of wheels are of ash. They are steamed and bent across a drum in the same manner as the ribs.