

In any well-organized sawmill the bark-covered slabs and the trimmings from the boards and planks are worked up into laths and similar small wares, or sawed into lengths for firewood. Even the sawdust is used, for it is burned as fuel in the engine-room, or distilled to make wood alcohol.

The product of the sawmill is rough lumber, and the operation may stop at that point. But sometimes a planing mill is operated together with the sawmill, and the lumber is cut into smooth-faced boards or shaped into mouldings and like products. The lumber as it comes from the saw is green or wet and must be dried before it is shipped to market. This is done either by piling in a yard so that every piece may be air dried, or putting it through a steam kiln.

Lumber is graded according to its strength, durability, and freedom from knots and blemishes of all kinds. If it is to be used for woodwork or furniture making, its beauty of grain is also an important factor; sometimes "hardwoods," such as oak and sycamore, are "quarter sawed" so as to show the edge grain to the best advantage.

Chief Kinds of American Lumber

The principal varieties of Canadian lumber are spruce, Douglas fir, and white pine. The great tropical forests of South America produce rosewood, mahogany, and other woods valuable for furniture making and cabinet work. In the United States the principal kinds of lumber are yellow pine, Douglas fir, and oak. Hemlock and white pine are also valuable woods. In nearly every country of the world are timber woods so valuable and beautiful that they are got to market at the greatest labour and expense.

The forests which once covered such a large part of the world have grown smaller and smaller. They were such immense forests that little thought was given to their preservation. (See Forests and Forest Protection; Furniture; Trees.)

LUNGS. The human lungs are as complicated and their functions as wonderful as those of any other part of man's amazing body (see Blood; Respiration). The windpipe divides into two main branches—the bronchi. These enter the lungs, and are subdivided again and again into the bronchial tubes, which branch like the twigs of a tree. The smallest divisions

enter into air-sacs, which are lobulated and have very thin walls. A network of capillaries is spread over the thin walls of the air-sacs, and it is in these capillaries that the exchanges between air and blood go on. The blood does not come into contact with the air, but the exchange of gases is made by gas pressure through the thin membranes of the air-sacs and the capillaries.

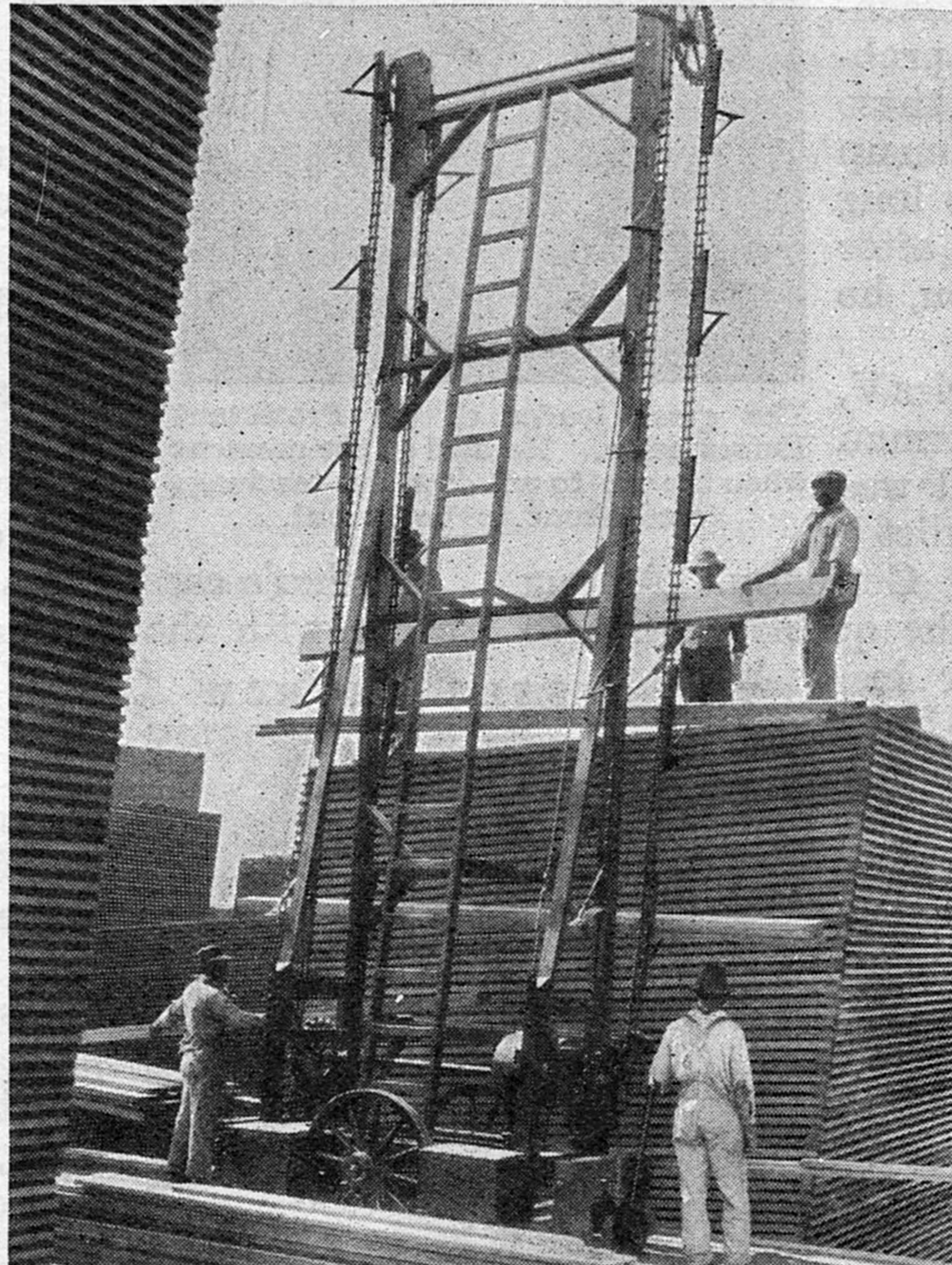
The substance of the lungs is spongy, and considerable elastic tissue enters into their structure, which allows them to stretch and contract. Not only bronchial tubes branch through the lungs, but also blood-vessels which carry blood to be aerated, and others carrying arterial blood to nourish the lungs, besides lymphatics and nerves.

The oxygen received by the lungs is carried by the circulation to the minutest parts of the distant tissues, and is there given up in exchange for carbon dioxide. It, therefore, is clear that there is an *external* respiration taking place in the lungs and also an *internal* respiration taking place in the tissues throughout the body. The latter is the more important part of the process of respiration, because it is in the living tissues that oxygen is used and carbon dioxide produced.

Breathing 18 Times Every Minute

The air is renewed in the lungs through the action of the diaphragm and muscles of the chest. The lungs themselves are passive sacs, but they are filled and emptied like a bellows by the action of the respiratory muscles. In general an adult breathes about 18 times a minute, and at each breath inhales 20 to 30 cubic inches. In 24 hours this amounts to about 400 cubic feet of air.

HOW THE LUMBER IS STACKED



After it comes from the mill, lumber is stacked in spaced layers like this, to let the air circulate between the boards. In mill yards this is done to let the original moisture evaporate, and in local yards for the boards to dry after rain and snows. In big yards machinery helps to do the piling.