

## AERONAUTICS

# Blades Made By Extruding

Instead of welding together two separate parts, hollow steel propeller blades are now made in one piece by forcing hot metal through a die.

➤ A NEW mass-production method of producing one-piece, hollow-steel propeller blades by forcing hot metal through a die was revealed by the Curtiss-Wright Corporation.

Technically, it is an extrusion process. The white-hot chrome-nickel molybdenum steel billet is formed first into a tube. When flattened, formed and finished, it becomes a one-piece propeller blade.

Blades now in use are usually made of two parts which are then welded together. The new one-piece blade is claimed to provide greater resistance to the severe fatigue and other stresses to which propellers on turbo-prop planes are subjected.

The extrusion method of shaping metals in a continuous form by forcing highly-heated materials through a die is not new, but it has until now been used on relatively simple forms. As far as known, the hot extrusion of steel to make anything approaching the complex shapes and tapered thickness required in propeller blade manufacture has never before been tried.

Advantages of the extrusion process in propeller-blade making include a saving in materials, skilled manpower, costly machining, floor space required for manufacturing

and tools. Operations in propeller manufacture, which now require hundreds of hours of hand work, are reduced by the new methods to a series of three steps which can be accomplished in minutes.

The development of the process is the result of research by Curtiss-Wright scientists and engineers in a program sponsored by the U. S. Air Force. Production for the Air Force already has been initiated. Plans are being made to supplement welded types now being manufactured with extruded blades as rapidly as possible.

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## NUTRITION

## Grow Your Own Vitamins If You Have Garden

➤ MANY FAMILIES are planning gardens this year partly as an aid to national and civil defense and partly as an aid to their own pocketbooks in these days of high food costs. Health can be served in three ways through home gardens. One is through the better nourishment provided when food budgets are limited. Two is through the increased outdoor exercise. Three is through the lift in morale that

comes from growing and harvesting your own food crop, however small it may be.

In deciding what vegetables and fruits to plant, be guided by the Basic Seven food plan. This plan divides the foods we eat into seven groups according to their nourishing qualities. Nutrition-conscious housewives follow it in planning the family meals.

One group is made up of the foods that can be the mainstay of the diet for vitamin A. This includes green, yellow and leafy vegetables such as spinach, kale, green peas, lima beans, snap beans and carrots. And you eat one or more servings from this group each day.

Two others of the Basic Seven food group can come from the family garden. One of these is the vitamin C rich foods from which one or more daily servings should be eaten. You can't, unless you live in Florida or California, have oranges and other citrus fruits in your garden, but you can have such other vitamin C fruits as melons and strawberries. And you can have tomatoes, cabbage, turnips, salad greens, and green peppers. Any of these provide vitamin C when served raw and tomatoes provide it raw or canned.

The third Basic Seven group that can come from the home garden is a catch-all group. It includes potatoes, beets, onions, turnips and radishes. These foods do their part in nourishing you by adding to the supply of various vitamins, minerals and other materials the body needs. Some of them add flavor that makes you want more of the other foods. Beets and turnips yield double harvests in their roots and their fresh green tops. You can add the green tops to your leafy vegetable group. Two or more daily servings from this third group are called for in the Basic Seven plan.

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## DENDROLOGY

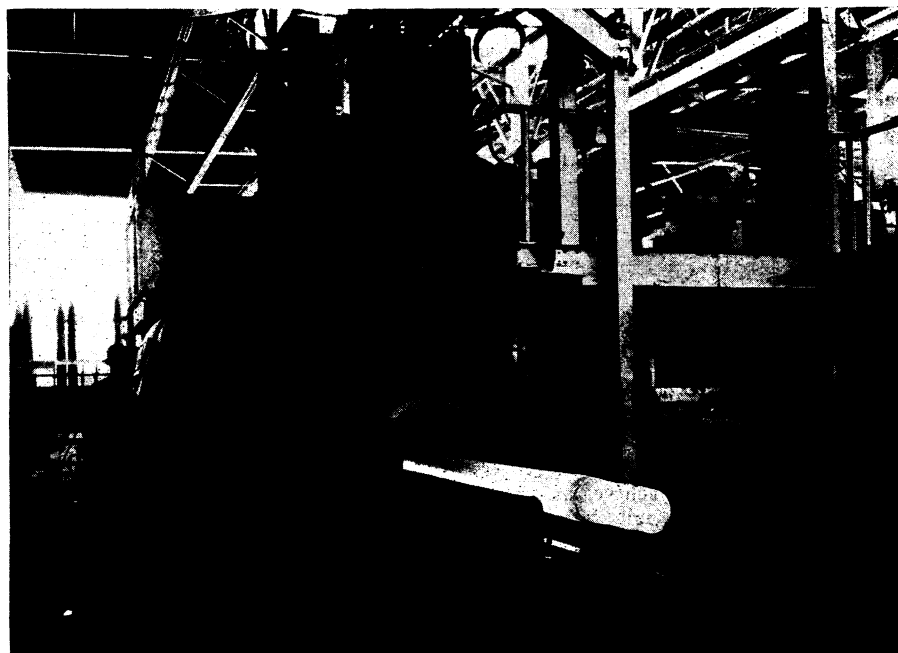
## Increase Income by Harvest of Timber

➤ HOW BEST to harvest timber is explained in a handbook just issued by the U. S. Department of Agriculture.

Many owners of small woodland plots could increase their income by doing their own logging, the handbook states. Logging operations include not only saw timber, but also pulpwood, fuel wood, veneer and other forest products. Over 300 photographs and drawings in the handbook help to show the tools needed and the methods used to harvest timber in the most efficient and economical way.

"The products of logging operations are critically important in the current defense effort," states Fred C. Simmons, logging specialist at the Northeastern Forest Experiment Station, Upper Darby, Pa., who wrote the book. (NORTHEASTERN LOGGERS' HANDBOOK, Govt. Printing Office. 75 cents).

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**EXTRUDED**—A white-hot propeller blade tube is shown here coming from the press following the third and final extrusion.