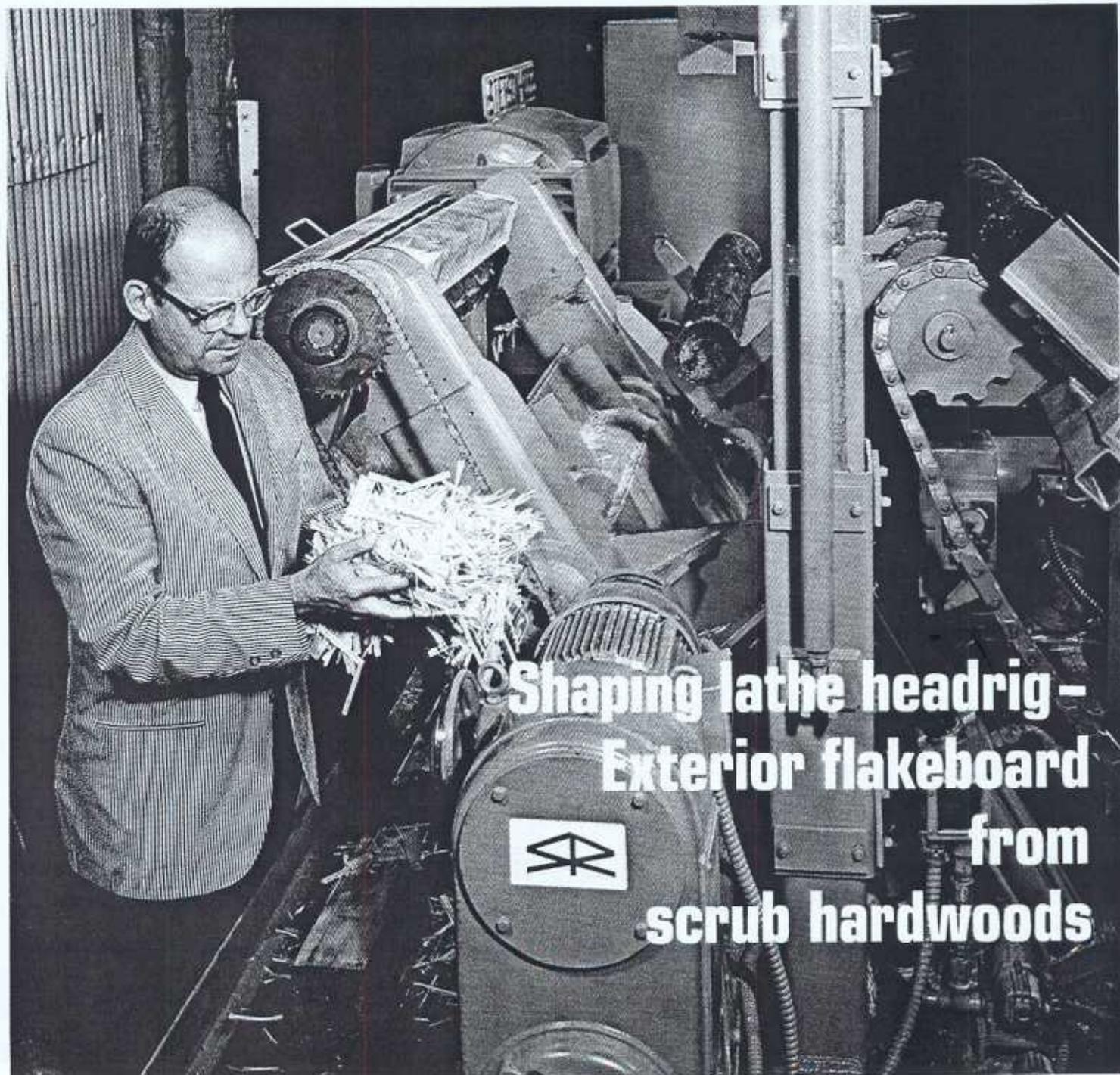


WOOD & WOOD PRODUCTS

NOVEMBER 1975



Shaping lathe headrig -
Exterior flakeboard
from
scrub hardwoods



Commercial shaping lathe headrig in operation during recent demonstration at Stetson-Ross plant in Seattle. In actual installation, chips would be discharged directly from cutterhead to conveyor for removal to flakeboard plant.

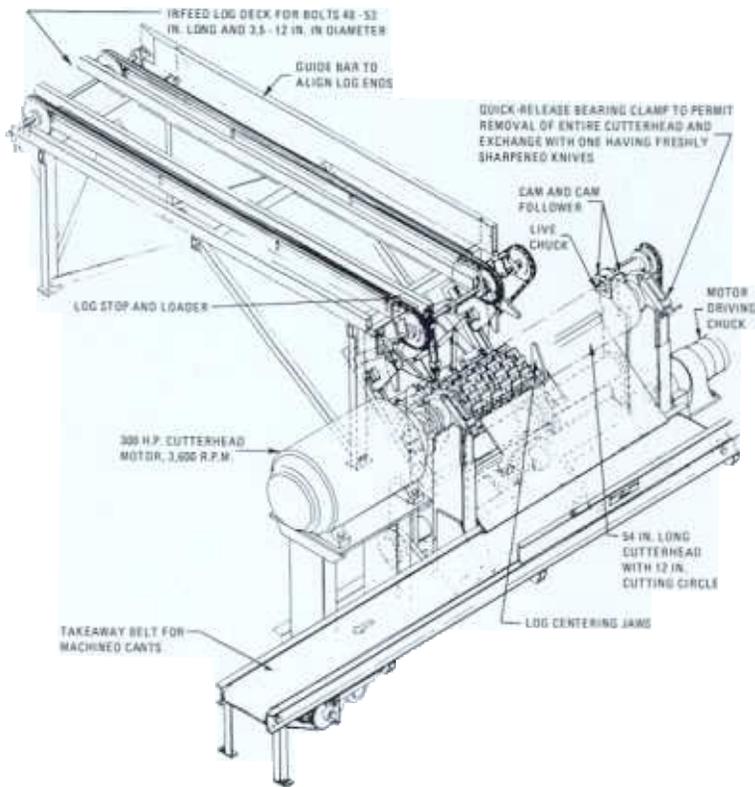
Shaping lathe headrig will stretch shrinking timber supply

As an alternative to killing the scrub hardwoods that grow in Southern pine forests, this machine will turn low quality logs into industrial lumber and usable flakes

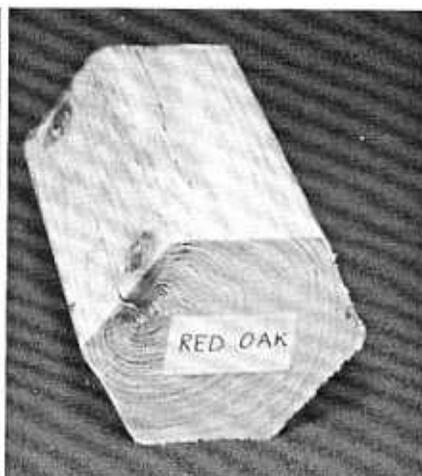
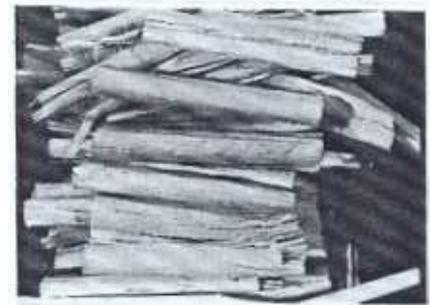
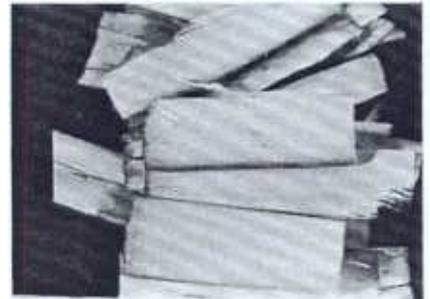
*By JO GENGLER and
JAMES D. SAUL*

THE FIRST commercial version of the shaping lathe headrig, designed to machine short hardwood or softwood logs into cants and flakes, was introduced to forest industry executives in September during a working demonstration at Stetson-Ross Machine Co., Seattle. Based on a concept provided by Dr. Peter Koch, chief wood scientist at the Southern Forest Experiment Station in Pineville, LA, the machine was built by Stetson-Ross under contract with the USDA Forest Service.

While conventional chipping head-



Above: Sketch of commercial version of shaping lathe headrig, including log deck, centering device, charger, and takeaway conveyor for machined cants. Right: Flake configurations vary with the species being machined; these flakes, .015 in. thick and 3 in. long, were cut from sweetgum (top), southern red oak (center), and hickory (bottom), soaked in water at 160 deg. F. Below: Finished cants have smooth surfaces with no torn grain.



rigs are best suited for conversion of straight softwood logs 8 ft. or more in length, the shaping lathe headrig can handle short logs of irregular contour, since the workpiece is positioned on end chucks rather than on through-feed chains or rolls. Koch believes this feature will make it possible to

expand the nation's timber supply by taking advantage of an abundance of small, low quality hardwoods that were once considered useless.

Flakeboard made from residue

One possible application for the machine is in the production of rail-

road crossies—two 7 x 4-1/2 in. cants from the shaping lathe headrig can be fastened together with steel dowels to produce a 7 x 9 in. tie. The headrig also lends itself to the manufacture of fenceposts and rails. It is especially well suited to the production of pallet lumber—a material increasingly in demand—and the flakes produced as a residue have potential for the manufacture of structural exterior flakeboard to compete in price and function with sheathing plywood.

"The object," says Koch, "is to make clean, valuable flakes from residue, rather than from a primary product. If you can make the cant itself carry the logging costs, the flakes become a bonus product."

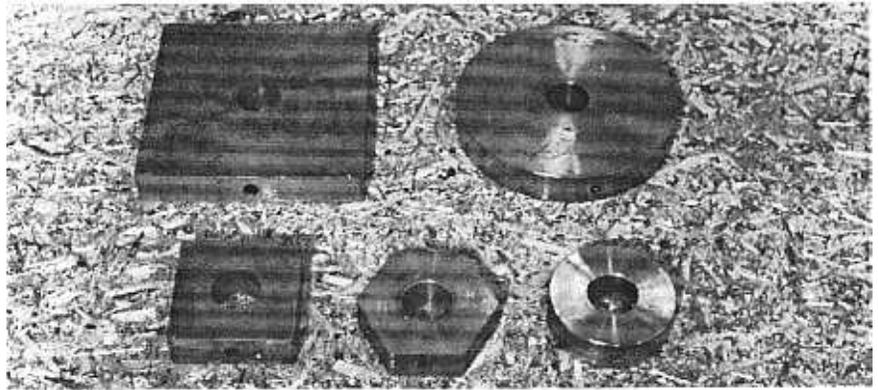
The shaping lathe headrig includes a log deck, centering device, charger, and takeaway conveyor for machined

cants. In operation, a single revolution of the chucked log yields a smooth, accurately sized cant with no tearout, even around knots. Its shape can be round, square, rectangular, hexagonal, octagonal, or trapezoidal, depending on the shape and dimensions of replaceable cams mounted on the workpiece spindle. The cam rotates and moves with the workpiece until it strikes a follower aligned with the cutterhead. As the workpiece revolves, the center distance between cutterhead and workpiece changes in response to the cam, and the log is machined to the desired shape and size. No sawdust is produced; the log is totally converted to lumber and usable flakes, at a rate of about six logs per minute.

The headrig operator can control the flake thickness by varying the rotational speed of the workpiece spindle. Typically, flakes are 3 in. long and .015-.025 in. thick; other characteristics depend on the species being machined. Flakes are discharged directly from the cutterhead onto a conveyor for movement to a flake-board plant.

The headrig utilizes a 54 in. long, six-knife cutterhead with a 12 in. cutting circle. A 300 h.p. motor, designed to momentarily carry an overload of double its rated horsepower without pullout from synchronous speed, turns the cutterhead at 3,600 r.p.m. Bolts 4-12 in. in diameter and 40-53 in. long are driven from one end with a 3 h.p. variable speed motor that provides rotational speeds of 8-27 r.p.m. Since the log needs to make only a single revolution to be sized, machining time is a brief four seconds.

"In an industrial situation," Koch says, "we believe we will get four hours of knife life before the knife has to be changed. Then, the whole cutterhead assembly is to be lifted out and carried off to the filing room, and a new assembly set in its place. This change should take about 15



Typical cams for Koch shaping lathe headrig. The largest is 8 in. in diameter, and the hexagon measures 4 in. across the flats.

minutes."

Logs 6 in. in diameter by 4 ft. long should yield about 12,500 bd. ft. of 4 x 4's and 30 tons of green flakes per shift, according to Koch's estimates. If logs are larger and of sufficient diameter to yield 6 x 6's, production per shift is expected to approach 30,000 bd. ft. with proportionately greater yield of flakes.

Ten years ahead of its time

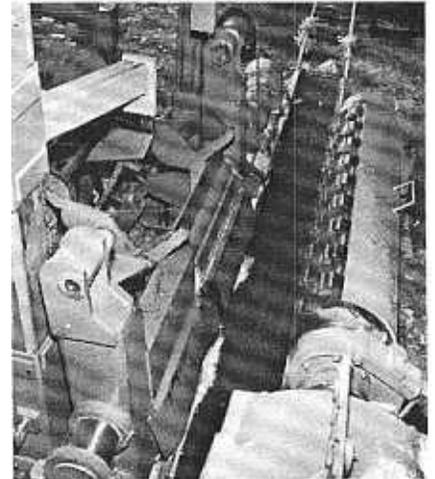
Koch demonstrated his first prototype headrig in 1963, but was unable to find a manufacturer interested in producing it. Years later, when soaring plywood prices prompted the Forest Service to look for ways of improving utilization, Koch's project was revived.

Stetson-Ross built a second prototype, capable of chucking a log 6-1/2 in. long, and it was shown at the 1973 Southern Forest Products Assn. machinery exhibition in Atlanta. Extensive testing of this laboratory model provided data that helped Koch develop a full-size machine for commercial use.

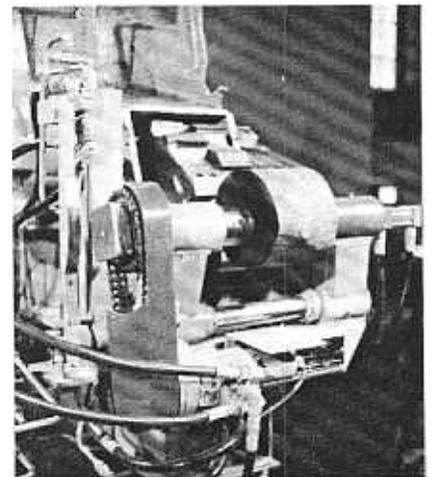
Both the commercial version and the smaller laboratory model are now available on a production line basis.

(For more information write number on Reader Service Card.)

Shaping lathe headrig
..... Stetson-Ross



Side view of commercial shaping lathe headrig, with cutterhead at right of cant takeaway conveyor. End chucks to grip log are left of belt. Square cam on end of driven chuck is the same size and shape as the cant will be after it is machined.



Second prototype headrig, with 10 knife flaking cutter in place.

Reprinted from
WOOD AND WOOD PRODUCTS, vol. 80,
number 11, pages 25, 26, 28, 30.
November 1975.