

Atomic energy has thus achieved another milestone toward peaceful application, not only by producing a better wood, but perhaps providing new impetus to an age-old industry.

In addition to improved mechanical properties, wood-plastic composites retain their natural wood grain and color since the process can be accomplished at room temperature, and the cellular structure of the wood is not changed. Actually, the process enhances the wood grain, adding to its beauty.

The wood-plastic "alloy," although tough and hard, can be readily sawed, drilled, turned and sanded and gives a hard, smooth and satiny finish. It can be machined on conventional woodworking equipment.

### Wood Has 'Built-in' Finish

For the housewife, this composite may have another advantage. Because the plastic extends throughout the wood, it has essentially a "built-in" finish. Therefore, if a stain or burn should occur on a piece of furniture made of the wood-plastic combination, sanding with steel wool and rebuffing might be all the refinishing that would be required.

Wood-plastic composites can also be produced in color. And the color, like the plastic, extends throughout the wood since the dye can be added to the liquid monomer during the impregnation process. Thus, the wood can have not only a built-in finish, but also a wide variety of built-in colors that would not wear off or chip as do surface paints and stains. The potentials for such a combination are enormous.

Also, the wood can be made fire-retardant by adding the proper chemical.

The treatment of wood by ionizing radiation is extremely flexible. The plastic can be picked for the particular wood that is to be used and the extent of impregnation and polymerization can be adjusted to suit the final product. Since no chemical catalyst is necessary, no foreign matter will contaminate the plastic and polymerization is more easily controlled.

Large sections and non-uniform woods can be treated rapidly with reasonable uniformity with gamma rays. Although most of the research work has been done with white and yellow pine, sugar maple, white oak and birch, almost any wood can be converted into the wood-plastic combination.

Thus, by carefully selecting the wood and finding the plastic most suited to it, woods for special purposes can be custom-made to suit the need. An unlimited horizon lies ahead for research in this field.

The plastics involved in the research by Dr. Kent have been primarily polymethylmethacrylate, polyvinylacetate and polystyrene.

Products from speakers' gavels to salad bowls are possibilities with the composite. Potential applications include door thresholds, doors of various types, mar-resistant surfaces, window sashes, hardwood flooring, flooring for trucks, paneling and a variety of other uses.

Pilot production is underway at Lockheed-Georgia Company, Dawsonville, Ga., which has produced a 325-square-foot floor

of the wood-plastic composite to be installed in the Federal Science and Engineering Exhibit at the World's Fair in New York.

The American Novawood Corporation is also participating in the Federal Science and Engineering Exhibit. Various wood-plastic items will be exhibited including an arrow, cabinet-leg, electric switch plates, shoe heels, hammer and knife handles, parquet and strip flooring and a sculptured piece.

Other studies are being conducted. In Durham, N.C., Research Triangle Institute is conducting a materials testing program in conjunction with North Carolina State University to supplement work done at West Virginia University where AEC's primary research and development effort is centered.

AEC studies will include analysis of the potential market, locating manufacturers, determining products for which this material is suitable and estimating annual production volume.

Other companies taking part in the various aspects of the research are Vitro Engineering Company, N.Y., and AEC's Pacific Northwest Laboratory, Hanford, Wash. To identify marketing potentials Arthur D. Little, Inc., Cambridge, Mass., conducted a market survey and found six major areas of interest in the potential market: construction, furniture, industrial materials, sporting goods, toys and specialties.

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### TECHNOLOGY

## Learn, Vote by Computer

► COMPUTERS accessible by telephone could both improve teaching and make voting easier, Dr. William M. Evan of the Massachusetts Institute of Technology suggested in Cambridge, Mass.

Dr. Evan took advantage of a multi-access computer at MIT recently to conduct a demonstration experiment. It could be operated over a telephone line from a separate room.

Dr. Evan circulated a questionnaire among the 70 engineers and managers in the audience and had their replies analyzed by the computer. It took the machine only 1.29 minutes to make computations that he estimated would have taken about 123 hours with a desk calculator, and he was able to present the results to his audience before the meeting ended.

The experiment suggested further possibilities to him which he discusses in an article entitled "Swift Feedback in Survey Research" in MIT's Technology Review, June 1965.

"In high school or university courses where large numbers of students are involved," he said, "the material presented by the instructor could be punctuated every 20 minutes by a test question. The students in the audience could record their answers to the question on a data input keyboard and a computer program could process the answers to inform the instructor, and perhaps also the students, as to the proportion of the answers that was correct.



Fremont Davis

**WORLD RECORD**—*Maynard L. Hill, seen above, tentatively established a new world record for radio controlled model aircraft by flying his eight-foot-span model a distance of 174 miles in a closed course. The previous record was 135.4 miles held by N. Malinkov of Russia. This is the third international record broken by Mr. Hill in the past two years.*

"Depending on the proportion of the students answering the test questions correctly, the instructor could decide whether to proceed at the same pace, to increase or slacken his pace, or to explain again some of the material he had presented to make sure that more of the students understood it thoroughly."

Looking still farther ahead to a day when people everywhere will be able to deal with a computer the way M.I.T. researchers can now, Dr. Evan points out: "With the help of a magnetic card—now being developed for economic transactions—which could be inserted into a special telephone set and which a computer program would recognize if it bore a legitimate number, every registered voter could vote in his own home without worrying about the weather."

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## Do You Know?

The iridescent coloring of the *hummingbird* is produced not by pigmentation but by "interference phenomena," like the rainbow effect of a soap bubble or drop of oil on a wet pavement.

New *grapefruit* juice powder may aid the expansion of grapefruit industries.

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