RESOURCES

Defense Needs Cobalt

Use of metal which can withstand heat of jet engines restricted. Non-defense use in television, radio and telephones cut 70%.

➤ JET PLANES have put the squeeze on Howdy Doody and Jack Benny. Defense needs for cobalt, a silver-white metal which can withstand the hell's fire of jet and gas turbine engines, will be felt first by makers of television and radio sets.

A cut of 70% was made by the National Production Authority in November deliveries of cobalt for non-defense purposes. Chief among these civilian uses of cobalt are special alloy steels used in making permanent magnets in television, radio and telephone receivers.

For a one-week period cobalt was frozen completely by government order. A spokesman for the Radio-Television Manufacturers Association said that without any cobalt at all, the industry would have had to shut down completely by the end of the year.

Cobalt alloy magnets are used in the electrical generators of airplane and tank engines. Mixed with beryllium and copper, cobalt goes into the propeller hubs of piston-driven aircraft.

But the most vital use of this highly-strategic metal is in machine tools. Mixed with chromium and tungsten, it makes a material called stellite. Stellite is the stuff of high-speed, heavy-duty, high-temperature cutting tools which are harder than any steel at red-hot temperatures.

Special steel alloys are made containing cobalt. These steels have wide uses in munitions and defense equipment.

Vitallium, an alloy containing about 65% cobalt, 30% chromium and 5% molybdenum, is used as a heat-resistant material in gas turbines and jet engines. (It is also used by dentists and doctors as a non-corrosive, electrically neutral metal for teeth fillings and surgical needs.)

Cobalt compounds are vital in making enamels stick to metal. They are used as pigments in paint, to color glass, in livestock feeds and in nickel-plating.

The major source of cobalt in the world is the Belgian Congo. A single company, the African Metals Corp. of New York, is the only cobalt importer. In this country, only an insignificant amount is produced, although the United States is far and away the world's biggest user of cobalt.

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FORESTRY

Fire Fighters Needed

Machinery which will operate effectively in forests is essential. Barrier makers, tanker units to replace hand labor requirements for forest fire control.

➤ SUITABLE machinery, capable of operating effectively under the conditions existing in woodlands, is essential to modern methods of fighting forest fires, the American Society of Mechanical Engineers was told by Gilbert I. Stewart of the Michigan Forest Fire-Experiment Station.

Effective methods of controlling forest fires can be made relatively simple if machinery is employed, he said. This machinery is used to construct firelines or barriers ahead of the running fire. These barriers are built as close to the fire as possible. The machines must be built with heavy plows or other dirt-turning equipment.

Other important equipment includes tanker units with powerful pressure pumps for use in subduing the fire with water. Like the barrier builders, they must be able to travel through woods under abusive conditions. No single type of equipment can be used in all areas because forest conditions vary greatly throughout the nation.

Present general methods of fighting forest fires are satisfactory, he indicated, but suitable machinery must replace hand labor. The uses of chemicals have barely been investigated, he stated. Application of aircraft in actual suppression work is in its infancy. The helicopter faces a bright future, especially in wilderness country.

Special methods of drying lumber, which are faster than conventional air-drying or kiln-drying, were discussed at the same meeting by Harold N. Tombach, Lane Company, Inc., Altavista, Va. These processes are already in use commercially to a limited extent but will probably find wider applications in the future.

They include vacuum seasoning drying with super-heated steam, vapor-drying, boiling-in-oil, drying with infra-red rays, dielectric heating and solvent seasoning. These special methods require more costly equipment than kiln-drying, but the decreased drying time makes a quicker turnover of lumber possible and, therefore, cuts the amount of money tied up in stocks of lumber.

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Fruit trees can well be used for lawn decorations and shade, and they help in the food problem.

In a special greenhouse used in connection with the development and testing of *insecticides,* plants are grown and also insects that kill the plants are raised.