

facturers of fish netting in the United States which comprise perhaps 85 percent of the domestic production of fish netting.

Although we are a relatively small industry, we believe we have problems which will be of interest to you and we appreciate this opportunity of presenting them.

FISH NETTING : DESCRIPTION AND METHOD OF MANUFACTURE

The nets made from the netting which we produce are used by the commercial fishing industry for catching menhaden, shrimp, salmon, tuna, and other species.

The netting we make varies in size of mesh and in the weight or strength of twine of which the netting is made. Single or double knots are used to make the webbing and some netting is made knotless. Netting may also be dyed and sometimes treated with a preservative.

These days, over 90 percent of our netting is made of synthetic yarns. Netting used to be made of cotton, but unless properly dried right after use, the cotton mildews and rots. The synthetic textiles are largely impervious to these conditions and so outlast cotton 4 to 1. Even at somewhat higher prices, the synthetic textile nettings have pushed cotton right out of the running.

The industry still makes some cotton netting used as a base for camouflage netting for our Armed Forces in Southeast Asia. Shortly after the Korean War, the Department of Defense considered the availability of supply of this item so essential that it stockpiled looms for its manufacture. Fortunately, our industry today can meet requirements, but in view of the steadily mounting import pressure we strongly doubt that we will be able to guarantee a supply a few years hence.

Fish netting is made on specialized knitting machines. The newest equipment comes from Japan, embodying the latest designs and we have a number of these looms.

Although we have little funds available for research and development, we have endeavored to obtain the latest improvements available commercially and to innovate where possible with our own ideas.

HIGH LABOR COST EVEN OF MACHINE OPERATION

One important problem in the operation of these knitting machines is the cost of replacing bobbins which have run out of twine. Since the number of bobbins equals the number of twines in the warp and the latter are but small fractions of an inch apart, the size of the bobbin and the amount of twine which a bobbin can contain are limited. Thus the bobbins have to be replaced frequently. On some netting there may be several hundred bobbins in use on a machine at one time. As the twine on a bobbin runs out, the loom automatically stops. A full bobbin is inserted in place of the empty one and the end of the new twine is twisted together with the old end to make a continuous thread.

This results in inefficiency, high labor costs and machine down-time expense. On the finer meshes, the machine may be operating much less than half time. As the splices have to be well distributed over the length of the netting, in order to maintain its strength, all the splices obviously cannot be made at one point. There appears to be no remedy for the situation.

This problem is particularly significant to us now, because labor costs in Japan—the chief source of imports—are so much lower than ours, that the Japanese can afford to cut their prices sharply below ours, particularly in the smaller meshes.

It is interesting to note that even the Japanese are sensitive to labor costs. Some of the Japanese netting manufacturers have established netting plants in South Korea where, with the newest equipment and lower labor costs than in Japan, these manufacturers can afford to undersell some of their Japanese competition. For example, in the U.S. market, the average unit foreign value of imports of synthetic fish netting from Japan in 1967 was \$1.45 per pound; corresponding imports from Korea were valued at \$1.02 per pound.

IMPORTANCE OF COMMERCIAL FISHING

Commercial fishing is big business. In 1966, United States fisheries provided 2.6 billion pounds of human food and 1.8 billion pounds of industrial (including animal food) products, primarily meal and oil.

Contrary to the belief of some people, the population's appetite for fish is not declining. U.S. per-capita consumption of fish, at about 10 pounds in 1966 was