

Textiles Next in Importance to Food

By John A. Menaugh

THE textile industry of America, crippled when hundreds of thousands of workers, according to union figures, marched out of the mills in the early weeks of September in a strike mainly against the wages and hours provisions of the cotton textile code, in normal times is the nation's second greatest industry, with an annual turnover (all branches and products) in prosperous years of eight to nine billion dollars.

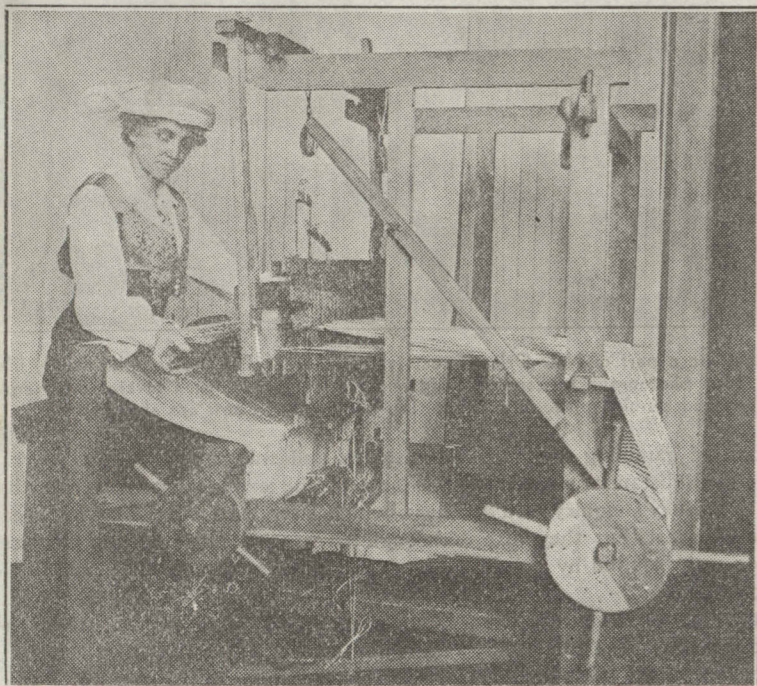
That so vast an industry, representing investments of billions not only in this country but in many another of civilized lands, could have been built upon the simple and prosaic business of weaving cloth is not surprising when one considers the enormous, universal need for textiles of all descriptions. No home anywhere, except that of the primitive savage, is without its more or less complete stock of cloth in the form of bedding, table linen, carpets, and the like. And virtually everyone except the aforementioned simple savage camouflages his nakedness in his active hours with garments manufactured from yards and yards of cloth. With the exception of food, there is scarcely anything so essential to man's existence and comfort as textiles and products made therefrom. Because nearly all of the world's one and three-quarter billions of people are ever buying textiles in one form or another, weaving and its associated trades long have held a place of vital importance.

Weaving an Ancient Trade

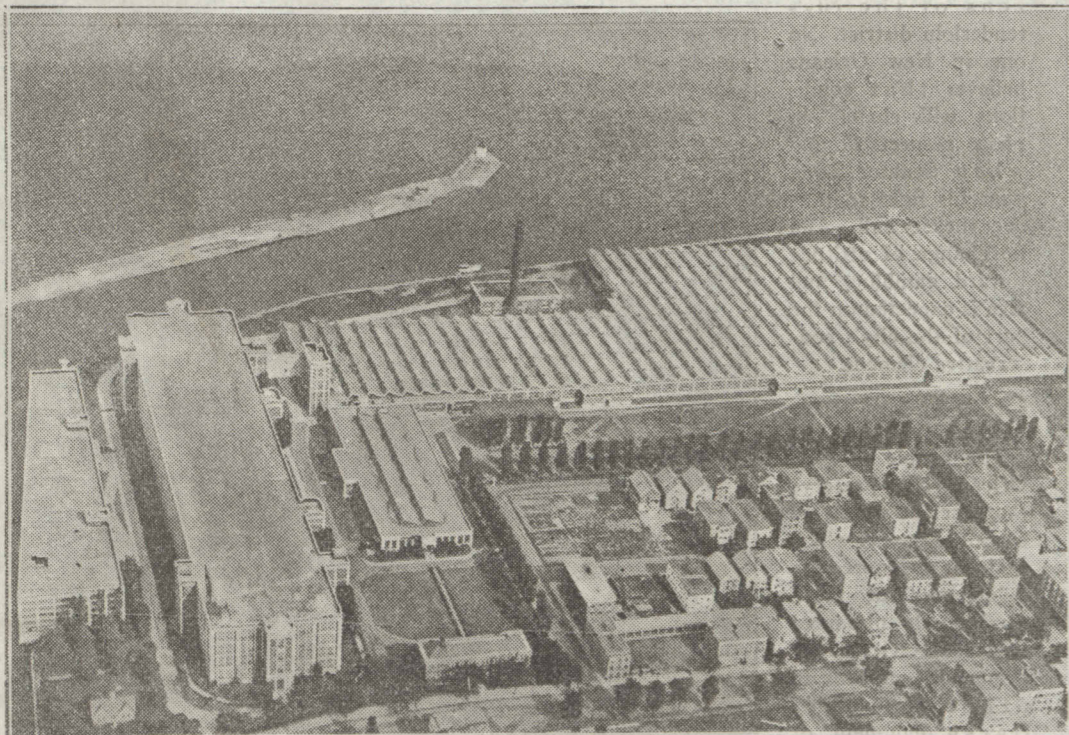
Weaving, in fact, is one of the oldest of trades, its beginning lost somewhere back in the haze of antiquity. For countless centuries before textiles were manufactured on a really commercial basis people were weaving cloth in their homes. The ancients, who in the very earliest days of clothing wore nothing more than the skins of animals, finally figured out that certain animal and veg-



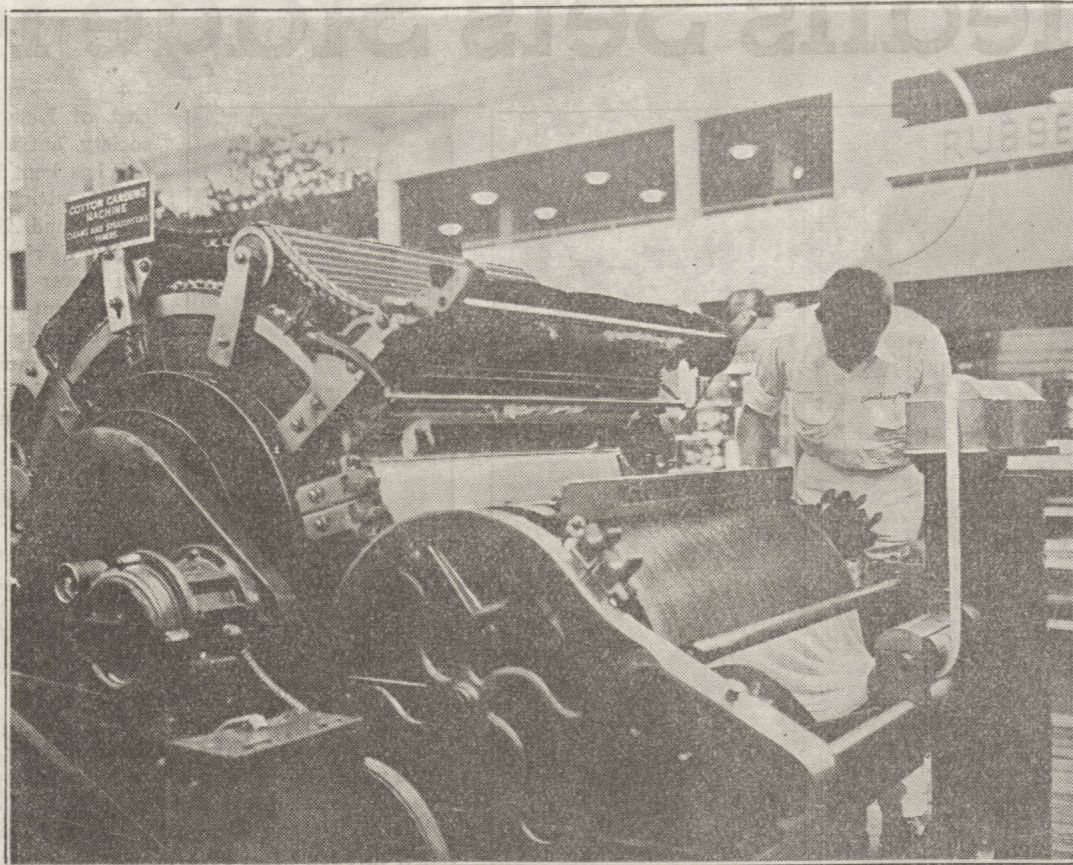
(F. D. Bemm photo.)
"The spinning wheel . . . came into use in Europe in the middle ages . . ."



(F. D. Bemm photo.)
"The seventeenth and eighteenth centuries saw a wealth of invention pertaining to the hand loom . . . many . . . fabrics still are woven on hand looms."



(Acme photo.)
"The textile industry of America . . . in normal times is the nation's second greatest industry . . ." [A typical American textile mill, covering many acres, at Salem, Mass.]



Raw cotton, fed into this carding machine, emerges in the form of a snowy, soft rope, the fibers cleaned, straightened, and ready for the first step in the spinning process.

etable fibers could be twisted into yarn and woven into coarse cloth. Preparation of the fiber, following the crudest of methods, and the equally crude spinning and weaving, were fundamentally the same methods as those employed today in the textile industry, where machinery has taken the place completely of hand work.

The first appliance employed in spinning the raw fiber into yarn was the spindle, merely a short shaft of wood tapered to either end and bearing a whorl, or wharve, somewhere along its length to give it momentum in whirling. The whorl was a disk of clay, stone, or wood, perforated in the center so that the shaft of the spindle would center in it. The spindle was whirled between hand and thigh or between both hands to draw off the fibers from a distaff or a roll into the form of twisted yarn. The spinning wheel, now looked upon as an extremely primitive device, came into use in Europe in the middle ages, though it is believed to have been employed in India even earlier.

Weaving, first attempted simultaneously with the initial experiments in spinning, since each was a step in the production of the first textiles, is thought to have been in the beginning purely hand work, without the aid of mechanisms of any kind. The earliest looms, of course, were quite simple in construction, though they employed the principle of the warp and the weft and, in improved models, the moving shuttle, a principle still the basis of the most ingeniously devised modern automatic loom.

The Hand Loom

The hand loom, in more complicated designs incorporating the use of foot pedals, performed the following operations: (1) Shedding, that is, raising and lowering the warp threads in predetermined sequence to form two lines between which the weft, or wool, could be passed. (2) Picking, or placing lines of weft between the divided

warp threads. (3) Beating-up, or striking each weft thread into position. (4) Letting-off, or holding the weft tense and delivering it as the weaving proceeded. (5) Taking-up, or drawing away the cloth as woven. (6) Stretching of the cloth widthwise to prevent the edge threads of the warp from breaking.

The seventeenth and eighteenth centuries saw a wealth of invention pertaining to the hand loom, and today many of the finest fabrics still are woven on hand looms as developed in that period of invention, though the products of the hand loom constitute only a very small proportion of the textiles now produced throughout the world.

The first power loom, forerunner of the batteries of looms now found in the great textile mills, is said to have been set up in Danzig in 1661. The people, accustomed to weaving their own fabrics in their homes, were shocked at the unfitness of this invention. They feared it would injure them, so Polish authorities took the inventor out and privately drowned him—a strange reward for genius. The power loom finally evolved from the hand loom—and still in the process of evolution—does everything (and more) that the hand loom did, many times faster and without flaw.

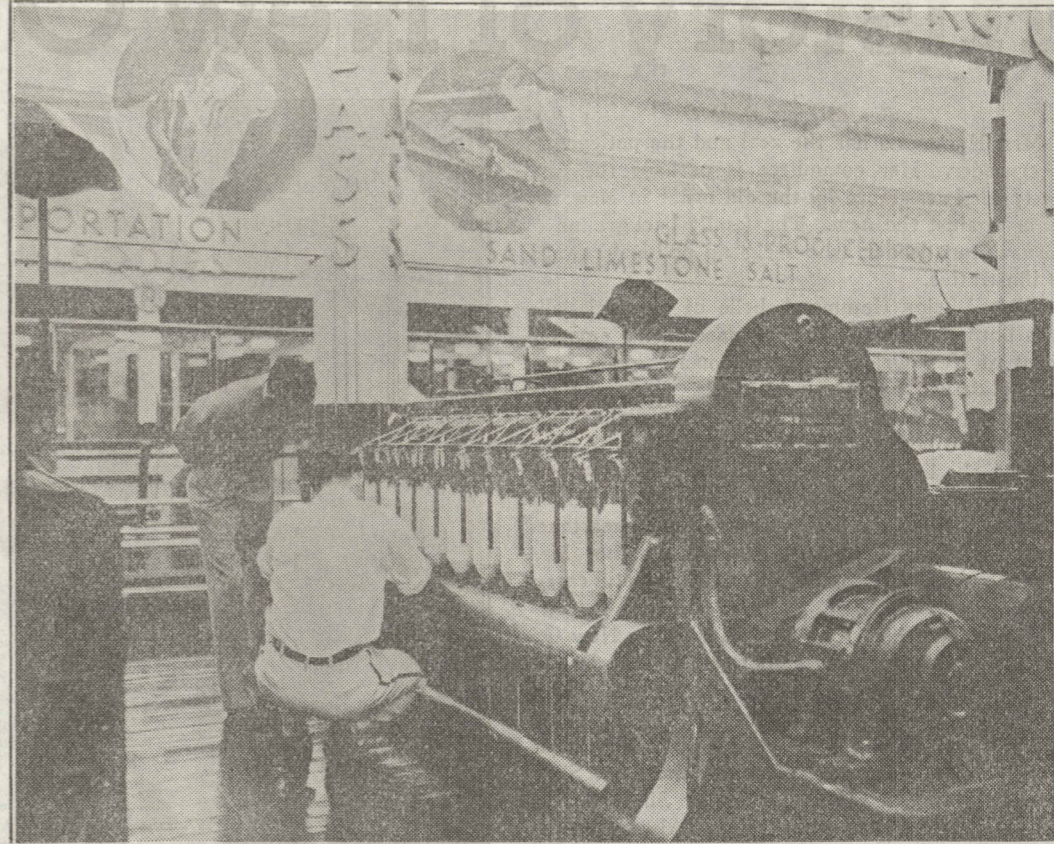
All Woven Fabrics Textiles

Processes of cotton goods manufacture pictured in a simplified way the modern equivalent of what the old-timers did when they laboriously produced a few yards of goods, from the carding of the fiber, through the spinning of the yarn, to the completion of the weaving on the hand loom.

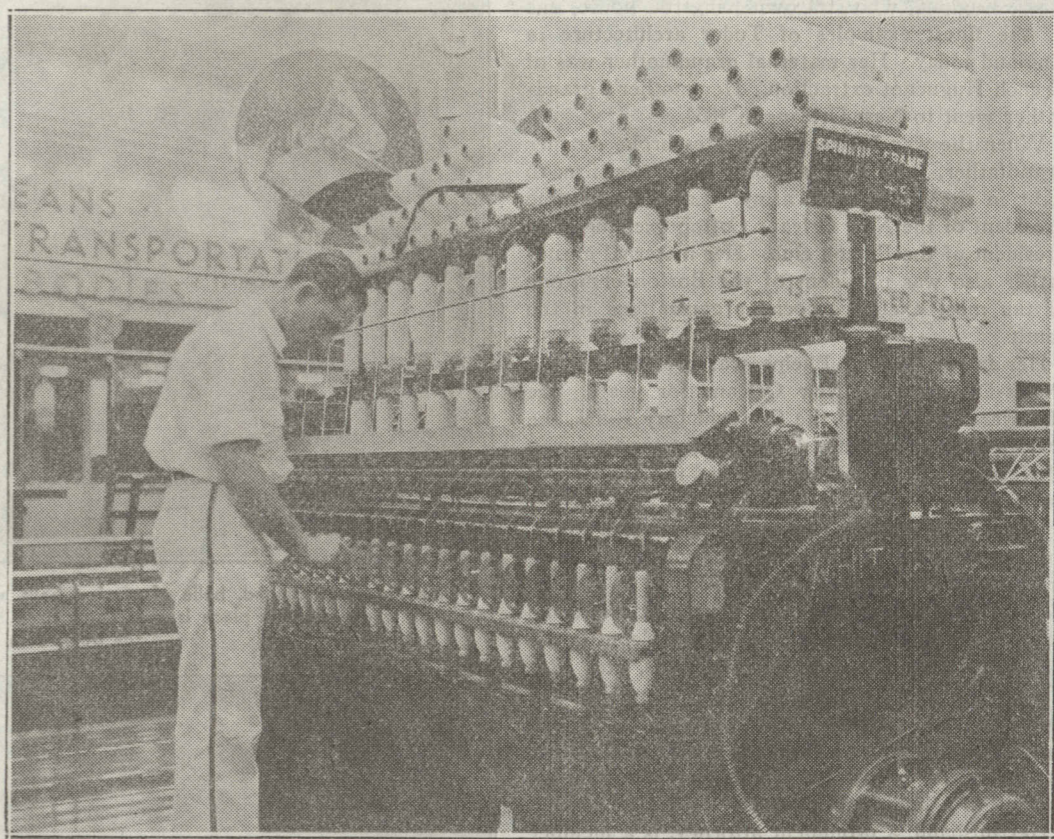
The first three, or upper, illustrations concern the production of the yarn, the machines pictured being modern devices that take the place of carding by hand and spinning on a wheel. The fourth, or lower, picture is that of the automatic loom, which in commercial manufacture of fabrics has taken the place of the hand loom.

The term textile in its broadest sense takes in all woven fabrics, including those made from the wool and hair of animals, cotton, flax, silk, jute, artificial silk, and cellulose. The fiber of each of these various materials is different from all the others, requiring special treatment and special methods, though in the main the entire business of making cloth of each and all comprises principal steps such as these: Separation of the fiber into individual strands; straightening of the fiber; twisting it into a thread, that is, spinning; weaving; finishing; and, in required cases, dyeing.

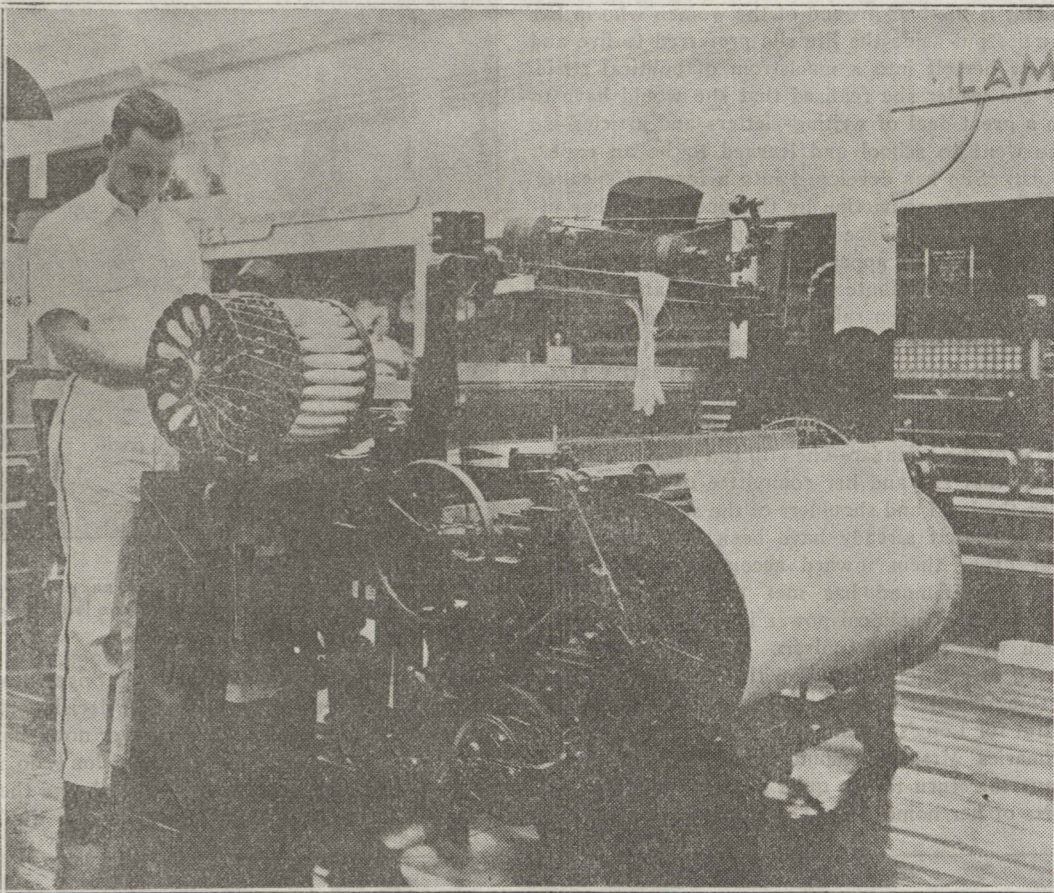
Silk, being of a nature entirely different from wool, naturally must be prepared in a manner of its own, though when it comes to the final weaving it is found that the loom employed works on the same general principle as that used in weav-



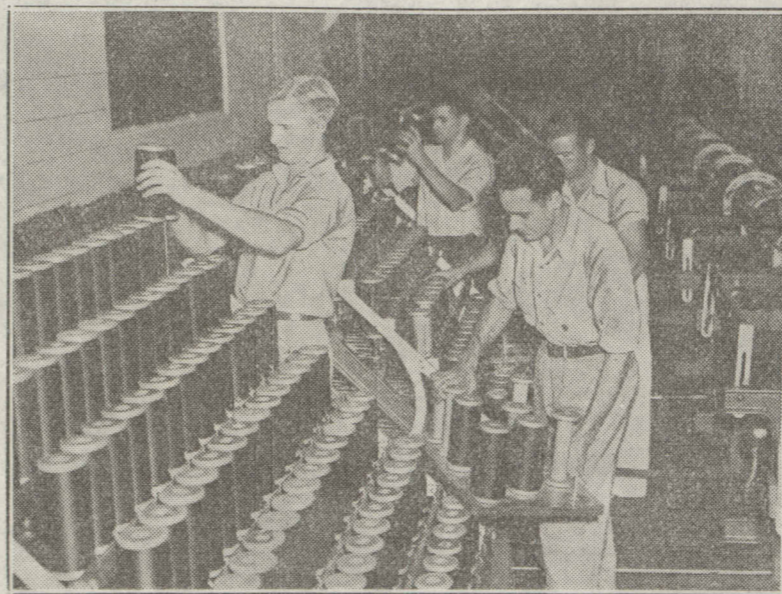
This machine is called the roving frame. Cotton which has been twisted into a loose rope comes to this machine and is spun into loose twine, as shown in the row of spools.



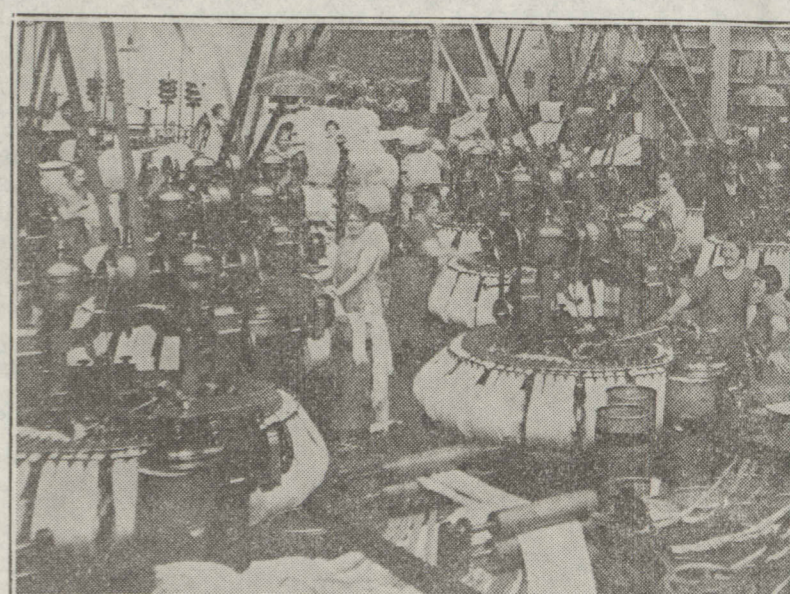
The spinning frame. Upon this complicated device, a development of the old-time spinning wheel, is accomplished the final twisting process in producing cotton yarn for weaving.



A high-speed automatic loom which weaves eight yards of hard-finish cotton cloth in an hour. Spindles of yarn, at left, feed into the loom, which turns out the finished cloth. [Series of four illustrations above from Amoskeag Manufacturing company exhibit in Ford Motor company exhibit, World's Fair.]



(Associated Press photo.)
" . . . annual turnover in prosperous years of eight to nine billion dollars." [Scene in North Carolina thread mill.]



(Acme photo.)
" . . . investments of billions . . . in many another of civilized lands . . ." [An interior view of a woolen mill in Yorkshire, England.]