color. They must stand the wear and tear of scooting over the floor, and this means frequent tubbings that might well be called scrubblings. The new high-count chambray, gingham, and broadcloths are durable; the smooth, close weave does not gather so much dirt; the colors are reasonably fast; the textures are comfortable for tender skins; and the firm weave makes it unnecessary to use starch. This does away with the scratchy seams that had to be endured by children of former years.

The sun suit has now come to be an accepted part of the summer wardrobe of the young child. Soft, open-weave materials such as marquisette and cable net make excellent tops because they admit the health-giving rays of the sun; and lawn, percale, gingham, poplin, and broadcloth may be used to complete the suits. These fabrics are fast to sunlight so that a child is free to play in strong light as long as he wishes without danger of having a faded suit.

**Materials for Play Dresses**

Little girls enjoy play dresses when they are fashioned from gaily printed lawn, gingham, and percale. The soft dainty texture of these fabrics makes them especially comfortable and adaptable to the designs which must always have fullness for free play. Dress-up frocks are attractive and practical when made of dotted Swiss, dimity, lawn, batiste, and voile. The daintiness of color and weave makes excessive trim unnecessary, and only enough to emphasize the beauty of the fabric is in good taste. Simple stitchery of color-fast cotton strand floss, bias binding, or contrasting fabric is usually sufficient. The fabric determines the trim.

Sturdier types of cotton satisfy the active small boys who must climb trees and turn somersaults. Many mothers have a mistaken fashion sense and dress their small lads in fragile fabrics that are not made for rough play. This is hard on a real boy and likely to prove costly. For hygienic reasons too, washable suits give most satisfaction the year round, and extra warmth can be provided by heavier underwear. Heavy cottons that are closely woven such as madras, gabardine, and galatea may be used for winter suits. In summer, blouses are comfortable if made of lightweight gingham that harmonize with trousers of the new fine-ribbed piqué, poplin, or broadcloth. These fabrics have body enough to tailor neatly yet they are soft in texture.

Shower-proof and closely woven cottons are good for out-of-door play suits when the air is damp or cool. They may even be used as cover alls for the warm woolen suits needed for the freezing days when snowballs fly.

**Clarice L. Scott,**

*Assistant Clothing Specialist, Bureau of Home Economics.*

**Cotton-Gin Fires**

An earnest effort has been made in recent years to develop some method of reducing the heavy fire losses in cotton gins. Some insurance companies have refused to carry insurance on cotton gins; others have limited the amount for which they will be liable; and in all cases the rates have been increased. Even with greatly increased rates the money paid on
claims in some sections has amounted to 500 per cent of the premiums collected. Any reduction in the fire loss which will result in lower insurance rates or make possible the carrying of additional insurance will benefit directly the cotton ginner and cotton grower. The tabulated data for the 5-year period from 1923 to 1927, as compiled by the National Board of Fire Underwriters, indicate an average annual payment of $2,078,606 on 1,584 claims against insurance companies. This figure is particularly significant in view of the small value of the average gin plant. No figures are available to indicate the losses from fires in uninsured gins or the claims paid by mutual insurance companies, but the amount of such losses would undoubtedly greatly increase the total.

In the statistics of the National Board of Fire Underwriters referred to, one-half of the total number of fires were ascribed to two of the known causes, namely, friction or sparks occasioned by running machinery, and smoking or matches. Eighty per cent of the remainder were listed as unknown. Undoubtedly, static electricity, included in the classification friction or sparks occasioned by running machinery, is the principal cause of fires during the ginning process.

**FIGURE 41.—One of the hundreds of cotton gins annually destroyed by fire**

**Conditions Producing Static Electricity**

In seasons when the largest number of fires in cotton gins have occurred, electrostatic charges have been abundant and troublesome. At such times the humidity was low, and cotton being ginned was particularly dry and dirty. During the periods when few fires occurred very little static electricity could be detected.

When humidity is low and cotton is both dry and dirty high charges of static electricity are common in the unloading and distributing systems, cleaners, and lint flues, and on saw and brush shafts, and practically all belts. These three conditions—low humidity, dry cotton, and dirty cotton—are essential for high electrostatic charges in the gin.

For the elimination of static electricity in cotton gins the grounding of machinery, as shown and described in United States Department of Agriculture Circular 76 C is recommended.

**Fire-Packed Gin Bales**

Fire-packed gin bales, that is, bales into which has passed some burning cotton ignited during the ginning process, cause serious losses.
It is recommended that immediately after a fire, the ginner plainly and conspicuously mark the bale that is tied out, regardless of the known or supposed condition of the bale. Some authorities suggest that these bales be identified by a red tag on which the month and day of ginning, as well as the gin is shown. This identification will serve as a warning to the compress yard weigher, the warehouseman, or the railroad agent that such a bale is a suspicious one and may contain fire. Bales so identified should be set aside where they will not endanger property or other cotton.

There has been considerable criticism, undoubtedly justified, of the general condition of the average American bale of cotton with respect to the fire hazard. It would seem that increasing the density of the bale, reducing its tendency to expand, and using a more closely woven burlap and more ties, would materially reduce the fire hazard in so far as the communication to and spread of fire among bales is concerned.

Fire Protection

In addition to the installation of a properly designed wiring system to eliminate static electricity and the precautions which should be taken to prevent smoking and the carrying of matches about a gin, adequate fire protection in a gin is of great importance. If a fire can be fought in its incipience it can be readily put out, and little damage will result.

Fire-protection equipment in a gin may consist of water barrels, tanks, pumps, and pails; hose and standpipe connections to a water-pressure system; chemical extinguishers; and steam jets into gin stands, lint flue, cleaner, and pneumatic distributor. Interest is being shown in the use of carbon-dioxide gas as a substitute for steam for fighting cotton-gin fires, especially since internal-combustion engines and electric motors appear to be supplanting the steam engine as a source of power in ginning. Systems using carbon-dioxide or other inert gases have been developed for fire protection in other industries, and it may be possible to adapt this method of fire protection to cotton gins.

Cost of Inert Gas-Production Systems High

The principal objection to such installations at the present time is the cost of the equipment. To provide complete protection against fire in the lint flue at all times while the gin is running would require from 4,000 to 5,000 cubic feet of carbon-dioxide per minute in the average 4-stand gin. Unless a large supply of carbon-dioxide is readily obtainable near the gin at a low cost, protection of this type is not practical. Carbon-dioxide stored under pressure in steel tanks is available, with arrangements for releasing this gas automatically when a fire occurs. Since a number of fires may occur at a gin within a few hours a large reserve supply of gas is necessary to provide protection while any used tanks are being replaced. A 50 cent reduction in the insurance rate is allowed for such installations, and when the value of a plant or the amount of insurance carried justifies the expenditure the use of inert gas should be considered. The cost of an installation will vary according to the size of the plant.

Cotton-gin manufacturers are endeavoring to cut down the fire losses by constructing the machinery of metal as far as possible. The results are encouraging, and if the cotton ginner will install such equipment
in a metal building grounded to remove static electricity and take the necessary steps to maintain a clean plant and prevent smoking on the premises cotton-gin fire losses can be decidedly reduced.

Hylton R. Brown, 
Engineer, 
Harry E. Roethe, 
Engineer, 
Bureau of Chemistry and Soils.

COTTON Grade and Staple Estimates Show Quality Trend

Public records have been kept since 1790 showing the number and the weights of the bales of cotton produced each year, but there have been no complete public figures showing the grade and staple of the cotton produced or consumed. In 1928, for the first time in the history of the industry, comprehensive figures were published showing the grade, staple, and tenderability of the cotton on hand at the end of the cotton year, July 31, and also for that year's crop. Figures were also published showing the number of bales of each grade and staple consumed by domestic mills during the preceding cotton year.

Quality is important to both growers and spinners. The cotton grower wishes to produce the cotton that will return to him the greatest net revenue. In the past, he has lacked information both as to the quality of the cotton he and other farmers were growing, and as to the grades and staples required by the spinners.

Spinners desire for use in their mills specific grades and staples, depending on the counts of yarn and the quality of the goods to be produced. This is especially true with respect to length of staple, because only within limits can one staple length be substituted for another. For certain uses, longer staples sometimes may be substituted for shorter, but it is not generally economical to do so. Staple length is, therefore, of special interest to the spinner.

Legislation Passed in 1927

In response to the demand for this information Congress, in 1927, passed legislation directing the Department of Agriculture to make an estimate of the grades and staple lengths of cotton carried over on August 1 of each year, and of the cotton as ginned during each crop year. Funds were made available for the fiscal year beginning July 1, 1928.

In carrying out the purposes of this measure, a representative portion of the 2,500,000 bales of cotton reported by the Bureau of the Census as on hand July 31, 1928, was classified according to the official cotton standards of the United States, and from this an estimate was made of the grade and staple length of all of the cotton reported as on hand. From these figures the number of bales tenderable on future contracts was calculated.

Of a total of 2,540,000 bales of cotton carried over to the next season, American upland constituted 2,400,000 bales, or a little over 95 per cent. Of these, all but 220,000 bales were tenderable on future contracts in accordance with section 5 of the United States cotton futures act.

More than 26 per cent of the American upland cotton in the carry-over was 1 and 1/2 inches in staple length. The next most abundant