DEPARTMENT OF COMMERCE AND LABOR
BUREAU OF MANUFACTURES
A. H. BALDWIN, Chief

SPECIAL AGENTS SERIES—No. 58

PACKING AND MARKETING OF COTTON

A STUDY OF PRESENT WASTEFUL METHODS AND CERTAIN SUGGESTIONS FOR THEIR IMPROVEMENT

By

JOHN M. CARSON

Commercial Agent of the Department of Commerce and Labor

TRANSMITTED TO CONGRESS IN COMPLIANCE WITH THE ACT OF MARCH 4, 1911, AUTHORIZING INVESTIGATIONS OF TRADE CONDITIONS ABROAD AND IN THE UNITED STATES

WASHINGTON
GOVERNMENT PRINTING OFFICE
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LETTER OF SUBMITTAL.

DEPARTMENT OF COMMERCE AND LABOR,
BUREAU OF MANUFACTURES,
Washington, June 21, 1912.

SIR: I have the honor to submit herewith a report by Commercial Agent John M. Carson on the packing and marketing of cotton. For years criticism has been made of the condition in which American cotton reaches foreign markets, and numerous efforts have been made to effect the much-needed changes in methods of handling it. Mr. Carson, in his report, sets forth the various factors involved and suggests a solution of the problem, which is of vital concern to everyone connected with the cotton industry. The Bureau issues this bulletin mainly as suggestive of the great need for improved methods, and the new system proposed by Mr. Carson is intended chiefly as a tentative basis only for further discussion by those interests most concerned.

Respectfully,

A. H. BALDWIN,
Chief of Bureau.

To Hon. CHARLES NAGEL,
Secretary of Commerce and Labor.

PACKING AND MARKETING OF COTTON.

PRESENT METHODS.

Measured in dollars and cents, cotton is the most valuable of the agricultural products of the United States, with the single exception of corn. Cotton cultivation is confined to 18 States, including Arizona, California, Kansas, Kentucky, and New Mexico, the output of which five States is about 70,000 bales per annum. Corn is produced in all of the States. Both crops have reached vast proportions in quantity and value and both are progressive. The corn crop of 1911 aggregated 2,513,488,000 bushels, and the farm value is placed at $1,565,258,000. The cotton crop of last year (1911) aggregated 16,250,276 500-pound bales, the total value of which is $1,000,000,000 and including the seed, $1,200,000,000. The annual production of wheat is 650,000,000 bushels and its farm value, roundly, $600,000,000. These three are our leading agricultural products and have supreme importance in the domestic economics and in the industrial enterprises of the country. The two food products mentioned are in the main consumed at home, only a little over 2 per cent of the corn crop entering into export and about 13 per cent of the wheat, while 65 per cent of the lint cotton produced is sold in foreign countries. These figures are presented to show the great value of the crops named and their relative importance in the country's commerce, to contrast the methods of preparing each for market, and especially to give illustration and emphasis to the antiquated and wasteful system that obtains in the preparation and transportation of American cotton.

COTTON COMPARED WITH OTHER PRODUCTS.

Corn, wheat, hay, sugar, tobacco, and all other products of the farm are carefully and systematically prepared, inspected, graded, and certified in accordance with established rules based upon sound, up-to-date business methods, and are so wrapped and covered as to insure against damage from frequent and rough handling, the vicissitudes of the weather, and loss from mutilation and pilferings. The care devoted to the preparation for and the transportation of these commodities to market is incidental to intelligent, progressive, and economical methods; but behind these is the powerful incentive that is aroused by very active competition, an incentive that is in part lacking in the case of cotton. The percentages of export of the several products under consideration suggest a strong reason for the inertia exhibited on the part of those engaged in the cultivation and handling of the American cotton crop. Civilized nations must have cotton to supply the necessities of their people and to meet the needs

of their industries. The world's demands are measured by 20,000,000 bales of 500 pounds each annually, and the natural increase steadily advances at the rate of 400,000 bales per annum, keeping pace with the world's material and moral advancement.

The United States furnishes approximately 75 per cent of the world's requirements and must necessarily continue in that relation, for the simple reason that no individual country or combination of countries can change or prevent natural conditions that furnish the United States with the advantages and facilities essential to the successful growth of cotton required in the manufacture of fabrics to meet cosmopolitan needs and habits. In these circumstances it is apparent that all who want must come to the United States for cotton, and necessity compels them to accept the product in such form as it may be presented. If the spinners of Europe could obtain cotton elsewhere in needed quantity and quality, they would not come to the United States and accept the unsightly and antiquated package with its wastefulness and loss, its fruitful sources for exasperating contentions, and liability to expensive litigation.

INADEQUATE AND INSUFFICIENT COVERING.

No commodity that enters into the domestic or foreign trade of any country is so carelessly prepared and so inadequately covered as American cotton. In the world's markets it is prized for its inherent qualities and execrated for the slovenly manner in which it is presented, and this condition is universally admitted by those who cultivate it, as well as by those who are responsible for its preparation and transportation. We have in cotton a valuable commodity, the growth of which is peculiar to the southern section of the United States, and the possession of which is essential to the industrial and physical wants of every civilized people; and although the demand for it is constant and imperative, aggregating in value $1,000,000,000, it receives less care than commodities of least value in the category of commerce. The importance of cotton to the industries of this country need not be recounted, but it is pertinent to recite the figures that describe its importance to the nation.

COTTON A LEADING FACTOR IN FOREIGN TRADE.

In the calendar year 1911 cotton contributed $517,000,000 to the volume of our foreign trade, to which should be added $42,000,000 for cottonseed products. In that year the value of animals, breadstuffs of every description, meat and dairy products, tobacco, fruits and nuts (these several items including the principal farm products entering into foreign commerce) aggregated $390,572,616. Iron and steel and their manufactures constitute another large and valuable group in our foreign trade, $250,000,000 worth having been sent abroad last year. The excess of exports over imports in 1911 was $559,459,516, that sum constituting the so-called balance of trade. Combining the two groups above named gives an aggregate of $640,000,000 in round numbers, which is about $81,000,000 greater than the balance of trade. The cotton exported brought to the United States in exchange $559,000,000, a sum about equal to the

balance of trade, and without which there would have been a balance on the foreign side of the national ledger.

EXTENT AND VALUE OF THE COTTON CROP.

In connection with the matters that will be discussed in this report the reproduction of a paragraph from Census Bulletin No. 114, recently issued, and which is a summary of the report on the production of cotton for the year 1911, will be helpful:

> The quantity of cotton reported for the crop of 1911, with linters included and round bales counted as half bales, is 16,109,349 running bales and is the largest crop which the United States has ever produced. Expressed in gross 500-pound bales, the crop amounted to 16,250,276 bales, exceeding that of 1910 by 4,244,588 bales, or 35.4 per cent; that of 1909 by 5,934,894 bales, or 57.5 per cent; and that of 1904, the largest previous crop, by 2,570,322 bales, or 18.8 per cent. The average annual production of cotton for the five years, 1899 to 1903, was 10,055,003 bales, and for the five years 1907 to 1911, 12,706,823 bales, an increase of 2,651,820 bales, or 26.4 per cent. Some idea of the possibilities of cotton production in the United States can be gathered from the fact that these figures represented in 1911 the production of an area which is only about one-eleventh of the total area of the counties from which cotton ginned was returned.

Sea island cotton contributed less than 1 per cent to the crop of 1911. The quantity of sea island produced was 119,293 bales, which is the largest quantity for a number of years. The average price of South Carolina sea island in 1911 was 23.73 cents; for that grown in Georgia and Florida, 20.41. The falling off in the average price of South Carolina is due to the comparatively low grade resulting from a severe storm early in the season, which damaged the crop. The average price of Egyptian cotton at Boston for the six months ended with March, 1912, was 18.75 cents. The average price of upland cotton ranged from 8.20 in 1902 to 14.69 in 1910. For the crop of 1911 the average was 9.69 cents.

A commodity of such enormous value to the industries of the country and of such paramount importance in the maintenance of the national credit in the settlement of international balances, surely should be handled and safeguarded in consideration of its great merit and value, and in accordance with the advanced methods that insure increased efficiency in production and the fullest measure of economy in the preparation and conveyance of products to market. Cotton is the only important commodity which has resisted the progress of the age and which continues to enter the market places in the form and garb of days prior to the Civil War. This condition is generally recognized and universally deplored. Efforts have been made by individuals, by associations, and by State governments to bring about the much-desired change, but these have not been attended with even a small measure of success. The cultivation and marketing of cotton concern so many persons, involve so many interests, and extend over so vast an area that the radical change demanded in present methods is perhaps beyond the power of individual effort or community of such effort to accomplish. The vastness of the industry, its supreme importance, its great intrinsic value, the opportunities that are offered to speculators, and the large profits

that accrue to agencies that intervene between the ginnery and the spinning mill combine to discourage and frustrate efforts on the part of private enterprise to bring about a reform. The existence and strength of these adverse conditions are recognized by all who are engaged in handling American cotton, notwithstanding which the admission is general that the inauguration of remedial measures is demanded in the interest of the producer, who is deprived of the reward to which his toil entitles him; the spinner, whose legitimate profits are menaced by excessive cost and unnecessary expense; and the consumer, who is obliged to pay a price for the fabric based upon extraneous charges incidental to the unbusinesslike and wasteful system in vogue.

HANDLING FROM FARM TO MILL.

Personal inspection of the methods of handling American cotton between the farm and the mill can not fail to startle the business man who knows the importance and value of economy in production and whose activities are directed by systems evolved from experience and perfected by the achievements of science and the general enlightenment of the age. These methods are maintained, not because modern and economical agencies are unavailable, but partly because of indifference and partly because of opposition on the part of those who profit by present conditions. The inadequate baling of the product is not an irremedial condition but an incidental feature of the present system. Cotton can be completely covered at the ginnery and compressed to any desirable density. Brief recital of the first handling of cotton—that is, its conveyance from the farm to the ginnery and subsequently to the compress—will give an idea of the antiquated, dilatory, and expensive methods that obtain.

The farmer or planter hauls his seed cotton from the farm to the ginnery. When ginned the lint is baled by the ginner, who furnishes bagging and ties, for which the average charge is $1. The ginning and baling being included in one charge, naturally the ginner uses the cheapest covering obtainable, regardless of appearance or sufficiency. The lint cotton is compressed into a package known as the plantation or flat bale. Jute bagging, much of which has been previously used, sugar bags that likewise have had previous service, and any other cheap material that can be readily obtained are employed by the ginner. From 1,500 pounds of seed cotton there will be a yield of about 500 pounds of lint. The farmer may sell the seed at current prices, which in recent years have averaged perhaps $23 per gross ton. The lint cotton may be sold to the ginner or be removed by the farmer. Usually it is taken to the nearest city or town and sold to merchants and buyers for local and other mills. It is at this point that mutilation and spoliation of the bale begin. Those to whom the cotton is offered inspect a sample to determine its quality. Each sample pulled weighs from one-half to 1 pound, and two or three holes may be cut and as many samples pulled before the cotton is sold by the farmer. If purchased by a merchant for future sale, or a buyer for immediate delivery the cotton is sent to a warehouse or shed, and in absence of these means of protection it is piled on the street adjacent to the business house of the purchaser.

PULLING OF SAMPLES.

The merchant, who as a rule purchases for future sale, retains a liberal sample, which is given a mark or number corresponding to that previously attached to the bale, and which may be divided into several samples to accommodate prospective buyers. The bulk of the cotton is sent to the compress for recompression, and if not previously sold for delivery is stored at the compress at fixed charges for warehousing, insurance, etc., the minimum charge being for one month. The warehouse facilities are very limited and therefore the bulk of the cotton awaiting sale and delivery is massed on the streets in so-called cotton districts, in inclosed areas destitute of covering, on platforms at railroad stations and steamship terminals, some of which are covered in whole or part by a roof but none of which is inclosed, so that the property is without proper protection. Recompression does not insure the bale not sold for delivery against further sam pling, with resultant damage to the covering and loss of cotton.

The custom of pulling samples is strongly intrenched, first, because of long usage; and second, because it is highly profitable to merchants and factors. Its continuance is naturally desired by those benefited. The buyer at points distant from production regards it with favor because the sample furnished assists him in determining the quality of the cotton or in confirming the judgment of his agent. The merchant and factor and other intermediaries favor it because each sample pulled has intrinsic value. The aggregation of these samples at the close of the season forms a considerable portion of a bulk estimated at 100,000 bales. This has become known as the "city crop," and its average annual value is placed at $4,000,000. The income to individual middlemen from sales of samples varies according to the number of bales passed upon and "pulled." The "city crop" is said to contribute largely toward paying running expenses of many business houses that raise or "pull" it. The statement has been made that as many as 45 or 50 bales of cotton derived from pulling samples have been sold at the close of the season by an individual concern.

CONDITION OF THE SMALL COTTON FARMER.

Much loss is caused by this sampling to both small and large farmers. The former class is numerous and contributes largely to the bulk of the cotton crop. Whether a farmer with one horse or with four horses, whether he cultivates 20 or 80 acres, his condition is the same. If there be a difference in gradation the condition of the latter is likely to be more wretched than that of the former. This class is without ready cash or property that might be used as collateral to obtain money with which to begin and maintain the work of the season. Therefore those constituting this relatively large class are from necessity obliged to consult the merchant or factor, who agrees to provide the means to enable the applicants to plant and cultivate a crop. The advance is conditional upon the farmer cultivating a certain acreage and producing a stipulated number of bales of cotton, usually one bale for each $10 advanced. Furthermore, it is stipulated that the cotton when ginned and baled shall be delivered to the creditor factor for sale on commission, and $1.50 per bale commission is exacted on the

number of bales stipulated even if a less number be produced. This stipulation is intended as an incentive to production and as an insurance for the loan.

Under the agreement the merchant or factor furnishes the farmer with supplies for his family, seed, fertilizers, and such other materials as may be considered necessary within the limitation of the agreement, for which the charges are usually greater than the same supplies might be bought for cash. Very little money is advanced. A high rate of interest, rarely less than 8 per cent, is charged, the interest period usually covering six or eight months. Charges for storage and insurance begin with delivery of the cotton to the factor. When it is sold an account is rendered the farmer, the debits including amount of loan thereon, storage, insurance, drayage, commission, etc. The weight of samples that have been pulled is, of course, so much loss to the producer, and in addition to this loss deductions are made for "country damage." In the final settlement the farmer is fortunate if the cotton has discharged his obligations. Under this system it is within the power of the factor to report the sale at a lower grade than that negotiated, thus depriving the farmer of an amount varying from $1 to $5 per bale. Grading is complex and intricate, requiring expert knowledge, and in all cases the farmer who can not determine or recognize the difference between the grades is at the mercy of the merchant and factor. However, classification is necessary and helpful to all parties concerned and the service performed by experts employed by the New York Cotton Exchange is generally acceptable to the trade. The differences and relative values in grades are explained elsewhere in this report.

COST OF CONVEYANCE—BALING METHODS.

The cost of conveying cotton from the ginnery or point of first concentration to the compress and from the compress to cars or steamship is an important factor in fixing the price of cotton to the spinner. Excluding loss in weight from sampling, country damage, drying out, and other causes, the cost of conveyance, ginning, and recompression averages at least $5 per bale. The flat bale, 48 by 30 by 56 inches (fig. 1), is an irregular, bulky package, 25 of which fill a 34-foot box car. When recompressed 50 bales can be packed in the same car. In consequence of this reduction in the size of the bale and resultant economy in space, the railroad companies carry recompressed bales at a lower rate than is charged for flat bales, and discrimination is likewise made by steamships in favor of recompressed cotton. Recompression reduces the size of the bale (fig. 2), but does not materially improve its appearance or character as a merchantable package. The jute covering furnished by the ginner (6 or 7 yards, 44 inches wide, weighing $1\frac{3}{4}$ to 3 pounds per yard, 2 pounds being the usual weight) does not cover the flat bale. The calculation is that recompression will reduce the package within the dimensions of the covering. Upon reaching the compress the covering shows the results of sampling, the lint protruding from numerous holes, and additional openings caused by the use of hooks in handling are prominent, the covering being so flimsy and weak as to be unable to withstand the pressure of handling. To cover these holes pieces of bagging are laid on the top and bottom of the bale when it is placed in the press. The work of recompression is so rapid (100 to 120 bales

per hour) that little time or care can be given to adjusting the patches, so that many bales emerge from the press with openings through which lint protrudes. In many cases pieces of jute are added merely to increase the weight of the bale and as an offset to the claim for tare made by the purchaser. This is particularly true with cotton intended for export. As previously stated, the service of the compress consists solely in reducing the size of the package. The bale is recompressed in the condition in which received, except for the patches contributed to conceal lacerations, and goes forward for further offering, sampling, and consumption, inadequately covered and in unsightly form.

SECONDHAND MATERIALS UTILIZED.

Aside from the impairment of the package by cutting the covering for samples, the use of secondhand bagging is contributory to the ragged condition of the American cotton bale. If new jute bagging were used on each bale, there would be complete protection and the covering would resist much of the pressure incidental to handling and which proves so disastrous to old bagging. What proportion of the crop is covered with old bagging is problematical. There are several degrees of this secondhand covering. The mills at home and abroad after stripping the bale collect and sell the covering, which is shipped to persons in this country who deal in it and work it over for sale to ginners and others. When old bagging is received it is sorted, and, conditions warranting, the pieces are sewed together. When a sufficient number of yards is thus secured the material is made into rolls and sold to ginners. Those pieces that can not be thus utilized are torn up by machinery, converted into yarn, and woven into cloth. This makes fairly good covering, but is not so strong as the original material. After the first manipulation and conversion of the secondhand bagging the output of each additional process is reduced in tensile strength and yields to the slightest pressure. The mills producing this class of covering also supply the large compresses with pieces of bagging, new and old, for patching. A large quantity of sugar bagging is also used for baling cotton and for patching, all of which is secondhand and much of which has been used several times. However, this bagging is usually a good quality of covering.

EXPENSES FROM FARM TO COMPRESS.

The expense for conveying a bale of cotton from the farm to the large compress for recompression is stated above to average $5. That this is a conservative estimate is shown by statements of actual expenditure furnished the writer by managers of large plantations. Following is the statement of the manager of a plantation embracing several thousand acres, located in Bolivar County, Mississippi:

Items.	Amount.	Items.	Amount.
Hauling from farm to ginnery	$0.75	Drayage, boat to compress	$0.25
Ginning, 40 cents per 100 pounds	2.00	Insurance in Memphis, one month	.25
Bagging and ties	1.00	Storage, one month	.50
Insurance on farm	.10	Compression	.50
Freight to Memphis by boat	1.25		
Insurance on boat	.25	Total	6.85

Freight by rail is the same as by boat, but there is no expense for insurance or drayage when the carriage is by rail. It seems, however, the water route is preferred for reasons given by the planter furnishing the above figures, who stated: "We have the choice of rail or boat. The latter is higher, considering insurance and drayage, but we prefer the boat on account of receiving prompt service. We can load cotton on the boat Saturday morning and have it in the warehouse at Memphis Monday noon, whereas by rail it takes from 10 days to 6 or 7 weeks to land cotton in Memphis, even when shipped in carload lots, when the season is on."

Another large planter furnished the following statement of cost of conveyance from the plantation to the compress:

Items.	Amount.	Items.	Amount.
Hauling to ginnery	$0.50	Weighing	$0.10
Ginning	2.00	Warehouse charges	.50
Bagging and ties	1.00	Compression	.50
Freight to compress	1.25	Fees for patching	.25
Drayage	.10		
Insurance	.15	Total	6.35

From a third source the following statement was obtained:

Items.	Amount.	Items.	Amount.
Hauling to ginnery	$0.75	Insurance	$0.50
Ginning	2.00	Compression	.50
Bagging and ties	1.25	Storage	.50
Freight to compress point	1.25		
Drayage to shed	.15	Total	6.90

Commission for selling is not included in these statements, as comparatively little cotton is sold on commission. The charge for selling is 2½ per cent and in many cases 3 per cent. Charge for commission may be safely placed at a minimum of $1.50 per bale. The cost for conveyance to ginnery and from ginnery to compress point varies according to distance. For storage and insurance at the compress warehouse the minimum charge is for one month. After the first month the charge for storage is reduced to one-half the charge for the first month. A charge for patching is made only when that service is ordered by the owner of the cotton. In the first statement the items given are those actually paid by the planter. In the others the cost for freight is given as representing an average of cost for that item. Deductions made on account of country damage and loss by sampling are not taken into consideration in the above statements. There is loss from sampling, and deductions are made for country damage, whether visible or not. These two items may be properly included in the cost of handling and added to the totals above given. They will average $2 per bale. The cost for commission where paid and certain incidental charges average $2.50 per bale, making an aggregate of $4.50 which should be added to the totals in the three tables given above.

A comparative statement of the cost of handling cotton by the old system and by the gin-compressed system has been made that indicates a very material difference between the cost of handling the

ordinary flat bale from the farm to Liverpool and its sale in that market, and the cost of handling the gin-compressed bale, the latter being possibly one-half the former.

ILLUSTRATION OF BALING.

The condition of cotton under different methods of handling is well shown by figure 3. No. 1 is a bale that has been ordered compressed by a shipper, the order including patching with a sufficient amount of bagging to cover the sample holes that were cut previous to reaching the compress. It will be noticed that in the upper part under the second band, some cotton is exposed, which indicates that this bale originally was covered at the gin with the lowest grade of jute bagging, with approximately one-fourth inch mesh.

No. 2 is a bale that has been ordered compressed and patched with secondhand bagging, which is bagging that has been stripped from cotton at the mills in America and abroad and is returned to various compresses for the purpose of using as patches. It is very often so applied on order from the shipper, on account of its cheapness, to fairly well covered bales, making what was originally a fair package one of very ordinary appearance.

No. 3 is a very long and wide spongy bale, the very worst character to handle at the compress. The bale, although large and ungainly, is exceedingly light and weighs considerably less than any bale shown in the illustration. The more this bale is pressed the worse it becomes, as it is wider and longer than the platens, or jaws, of a compress, and it necessarily follows that the pressure in the center bulges the package out at the sides. The original covering was of an inferior character, and the bale was not ordered patched. It will be noticed that the second upper band passes over the original sample hole. The space where cotton shows between the third and fourth bands is where, after the bale was compressed, the owner, desiring a sample, cut the packing to obtain it. He then evidently sold the bale to another buyer, who, to satisfy himself that the cotton was as represented by the sample, again cut the bale at the point above the lower second band. It is probable the bale was shipped just as it is shown in the picture.

No. 4 is a standard box bale, with original poor bagging. It was not ordered patched, which fact is in evidence, one of the lower bands having passed over the original sample hole before compressing. As was the case in No. 3, the owner desired a sample, possibly to forward abroad, and after compressing cut the bagging below the first upper band, leaving that part of the bale exposed. Whether or not the bale will go forward in even as good condition as the illustration shows depends entirely upon the owner, who may resell or resample the bale two, three, or four times, each time cutting another hole and drawing another sample.

No. 5 is an extremely wide bale, wider than the platens, and weighing more than 600 pounds. It was ordered compressed without patching, but had originally a side strip on each side. One of these strips was applied to cover the side exposed to the camera; the other strip was used to cover holes on the opposite side of the bale. In this case first one strip was used on each side, which was not sufficient to cover the width of the cuts in the bagging, and therefore

the cotton is thoroughly exposed between the first and second and second and third bands, and in the center of the bale, about the lower portion between the second and third band, counting from the bottom up. These holes are each about 1 foot in diameter. Attention is directed particularly to the hole in the center of the bale. This was evidently cut with a big jackknife in the country by the farmer, who had his bale ginned, then dumped into a wagon at the gin and carried to town, where it was offered for sale on the street. Having had his cotton newly clothed at the ginnery the farmer cut this hole, drew a sample, and "hawked" it on the streets for sale to the highest bidder.

No. 6 is simply a bale of cotton ordered pressed without patching, resampled by the owner, and the bagging at the upper end torn to pieces.

No. 7 represents a bale ordered compressed and patched, and afterwards resampled twice.

X X represent two gin-pressed bales that never have been sampled. They are in evidence as almost perfectly packed, regarding dimension and density, but the worth of packing has been destroyed by putting on the most flimsy burlap that could be bought to cover this otherwise acceptable package. Examination under a magnifying glass will disclose that the bagging is about to fall to pieces. It will be shipped in its present form. Each handling with hooks will tear the bagging, and what could originally have been a model bale will no doubt reach destination in a most deplorable condition so far as covering is concerned.

A A represent two bales of compressed cotton that had originally one sample hole in each. The owner ordered this cotton compressed and afterwards covered with new, standard bagging. It will be noted that the bagging applied to these bales, the patching from the top to the bottom of the marking, is of better quality than the original that shows just above each marking. But even at that, the bales represent what a perfectly compressed bale would be if standard boxing were adopted in the country and cotton were perfectly covered. It is highly probable that if these two bales were to encircle the globe and have frequent handling they would reach their destination in practically the same form shown in the photograph.

ARTIFICIAL MOISTURE—COUNTRY DAMAGE.

The indifference exhibited in the proper care and safeguarding of this great crop by all who handle it is inexplicable and unjustifiable. Beginning with the farmer, it is treated as if immune to all climatic changes and conditions and invulnerable to damage from any rough treatment that may be encountered. The farmer will deliberately place the bale on the ground, without any protection whatever, and for the avowed purpose of having the weight increased by moisture. In furtherance of this purpose the cotton is often so placed as to acquire the greatest amount of moisture in the shortest time, depressions in the ground and similar locations favorable to the end in view being preferred. Exudation under fair-weather influences is almost as rapid as absorption, so that the purpose of the exposure is not fully realized, and as purchasers readily detect excessive artificial moisture

and make deductions for it, the farmer is liable to sustain loss rather than secure profit from the deliberate exposure of his cotton. Moreover, it frequently happens that long exposure results in such serious damage as materially to reduce the intrinsic value of the cotton.

The loosely packed gin-box bale, whose density is 10 to 12 pounds to the cubic foot, will absorb a greater amount of moisture than the more densely packed recompressed bale, and by reason of less density moisture will evaporate more quickly in the case of the former.

Many examples might be given of damaging effects of exposure. One such example is furnished by the State of Georgia. Last year that State grew a considerable quantity of cotton on its farm, which is operated by convicts. The cotton after having been ginned and baled was allowed to remain on the farm without protection against the weather. In April last proposals were invited for the purchase of the State cotton, in response to which a number of merchants visited the farm for the purpose of making an inspection preliminary to offers to purchase. Inspection disclosed that the cotton was damaged to an extent that made it necessary to unpack and spread it out that the visible damage might be removed by picking and that the remainder might be resuscitated by exposure to the sun and wind. Not a single bid was made for the cotton by those who were invited to purchase.

CAUSE AND EXTENT OF COUNTRY DAMAGE.

Country damage prevails to such an extent that it has become the custom to consider reclamation on that account, and in purchasing from the farmer the merchant usually deducts some points to cover that contingency. One estimate places the loss to the farmer on account of country damage at $2 per bale. This form of damage is inseparable from carelessness in handling after the cotton is ginned. The farmer usually retains possession of the cotton after ginning for a period of one to six months, during which time it is exposed to the weather and is moved about over platforms, dragged over fields and roads, at the convenience or to meet the necessities of the owner. The bale being loosely pressed and only partially covered, readily absorbs moisture and the lint, which is exposed by lack of covering and obtrudes from sample holes, becomes discolored, stained, impregnated with dust, and suffers other damage that affects the commercial value of the bale. Much of the country damage is claimed to be sustained while the cotton remains in possession of the farmer or the merchant, and before it undergoes recompression. The damaged lint is picked from the bale and is so much loss to the owner. It sometimes happens that the country damage is so great that the covering and ties are removed, the entire bale overhauled, and the cotton repacked. Compression at the ginnery and covering the bale completely with good jute or burlap would very largely reduce, perhaps entirely remove, liability to country damage. Figure 4 represents cotton removed from warehouse at Augusta, Ga., in consequence of floods in April and May, 1912, and exposed for resuscitation. This cotton had to be rebaled.

SIGNIFICANT ACTION BY STEAMSHIP COMPANIES.

In connection with existing methods of sending American cotton to market a movement on the part of agents in this country of steamship companies engaged in carrying the product to Europe has significance. Owing to the fact that in recent cases brought to trial the ocean-carrying companies were held liable for damage to merchandise for which a clean bill of lading was given upon its reception, steamship owners instructed their agents to take the necessary steps to guard their companies against this liability. Agents representing practically all the ocean-carrying companies held a meeting at New Orleans on April 16, 1912, and after full discussion and deliberation decided that beginning September 1, 1912, the receipt of cotton at ship side "in apparent good order and condition" would be strictly interpreted, and that no clean mates' receipts, mates' receipts, or ocean bills of lading would be issued for cotton which was not delivered to the vessel entirely covered and free of all evidence of damage. This action grew from the fact that it has been customary for the companies to give clean bills of lading for merchandise received from railway companies as well as individual shippers when there was no visible evidence of damage. In suits to recover damages instituted in this country and England it was contended by the companies that they were not liable for damage that had evidently occurred before the merchandise came into their possession. In each case the claim was for country damage to cotton. It was held by the courts in both countries that having issued a clean bill of lading the companies were liable, upon the assumption that the merchandise was therein accurately described. The meeting alluded to held at New Orleans was participated in by agents of all ocean lines plying between the Atlantic and Gulf ports and those of Europe. Strict adherence to this resolution would compel shippers to entirely cover cotton, otherwise the documents issued by the ocean companies would be stamped to show the actual condition of the cotton when received at side of ship.

The action of the steamship representatives is set forth in the following, to the strict adherence of which those attending the conference obligated themselves and their respective companies:

> That from and after September 1, 1912, the receipt "in apparent good order and condition" will be strictly interpreted in regard to cotton or any other merchandise, and that no clean mates' receipts, masters' receipts, or ocean bills of lading will be issued for cotton which is not delivered to the steamer thoroughly covered, free of evidence of damage, durably and legibly marked; that on and after September 1, 1912, railroads will be required to deliver at the office of the agent of the steamship line made a party to any through bill of lading, two (2) certified copies of same within 72 hours after date appearing on said bill of lading; the bill of lading must bear the steamship agent's contract number, under which issuance was authorized; no cargo on through bill of lading will be forwarded until after copies of bill of lading have been delivered to the steamship agent.

OUTCOME OF CONFERENCE ON SHIPPING COMPANIES' ACTION.

Vigorous protest was made by cotton exchanges and exporters throughout the country against the action of the steamship agents, and at the instance of the New Orleans exchange a meeting was held

at that city May 15 which was largely attended by representatives of the several branches of the cotton industry. The sense of the meeting was expressed in the following resolutions:

That it is the sense of this meeting that cotton should be properly covered, with the ends sewed and the bale of proper density, and that we will lend our efforts toward accomplishing this end; but we consider that a bale of cotton with two uncovered sample holes does not constitute bad condition, such sample holes being absolutely necessary for the proper conduct of the business, and we believe the steamship agents have shown that claims due to open sample holes have been frivolous and trifling.

That it would be impracticable and unnecessary to cover the sides of the bale, from which source the steamship agents admit there is practically no damage.

It was further decided at the New Orleans meeting that a conference of all parties interested in the handling of cotton should be called to meet at New York July 15. In compliance with this call upward of 100 delegates met at New York on the date stated, representatives being present from cotton exchanges, shippers, steamship and railroad companies, bankers, and insurance companies. After discussion of the differences, a committee was appointed, which reported the following as a compromise:

It is mutually understood and agreed that the description of the condition of the cotton does not relate to insufficiency of or to the torn condition of the covering, nor to any damage resulting therefrom, and that no carrier shall be responsible for any damage of such nature, nor for any damage not caused by its negligence.

This agreement, reported by the committee, was given unanimous approval by the conference, and following September 1 the above paragraph will be added to bills of lading of railroad and steamship companies.

TESTIMONY OF A PRODUCER.

Mr. G. R. Hightower, of Jackson, Miss., a large producer of cotton, in a discussion of baling and handling American cotton at the meeting of the International Congress of Master Spinners' and Manufacturers' Associations held at Barcelona, Spain, in May, 1911, thus described the manner of handling cotton in the United States while in transit from gin to mill. The description applies particularly to the product of small growers.

It is found by the buyer at the market place of the small town on the grower's wagon. The covering is there cut by the small merchant or local buyer and a sample drawn, and the bale is then thrown on the ground and weighed. From this moment it is abused, reweighed, resampled, weights padded and grafted on in every conceivable manner, until it reaches the mill. The ground is usually wet and the bale absorbs moisture, and after remaining on the ground a few days exposed to the weather, the first buyer will probably have accumulated enough cotton to attract a larger buyer, who collects larger lots, and sells to a buyer higher up or to an exporter. Many times it passes through a dozen hands before reaching the exporter, and each time a new sample is drawn. After being bought by a larger buyer or exporter it is ordered to be shipped to the large compress, and oftentimes lies on an open platform for weeks before being shipped from point of origin. This delay and exposure is particularly common during the rush of the season when the railroads are crowded. On arrival at the compress it is more apt to find a place on an open platform than under a shed. The average period of exposure after the bale is sold by the grower is about six weeks, and it is during this time that 85 per cent of the country damage occurs. The great trouble lies in the fact that the dozen of small

buyers who handle cotton have no facilities for taking care of it, and the exporter is not prepared to protect it, hence it has a perilous journey after passing out of the grower's hands and before reaching the mill.

LACK OF WAREHOUSE FACILITIES.

The farmer is not singular in this respect. The merchant is equally careless and indifferent, but his action is in the main attributable to inadequate facilities to protect rather than a desire artificially to increase the weight by questionable processes. The fact that there is great deficiency in facilities for proper storage and that it has long been the custom to see cotton flanking the highways and massed at convenient points for long periods of time, exposed to the weather and offering temptation and opportunity for pilfering, has been instrumental in creating a feeling of indifference and in contributing to the belief that long exposure does not damage cotton. Therefore merchants look with complacency upon cotton without shelter, and when questioned will reply that rain and dampness add a certain degree of moisture which sunshine and wind cause to evaporate and leave the cotton without appreciable damage. Lack of proper storage and systematic warehousing, like insufficient and inadequate covering for the bale, is a natural result of the perpetuation of the antiquated system of handling cotton. These adverse conditions are primarily attributable to the absence of system and lack of organization in this enormous industry. It has grown without the nurture and aid that come and abide with organization. The world's necessities have applied the propelling force, and this would undoubtedly have been much greater, more efficient, and valuable with organization as an auxiliary.

Mr. Harvie Jordan, of Atlanta, Ga., a cotton planter and otherwise interested in the industry, in describing the lack of warehouses and the consequent loss and damage, said:

> The absence of adequate warehouses and shedding facilities at interior points and at our ports is responsible in a great measure for the badly damaged condition of lint when finally delivered to the mills for consumption. There is not a single cotton-growing county in the Southern States which has ample or first-class warehouse facilities for the storage of the crop until ready for sale and shipment. There is not a single compress plant in the South with adequate shedded platforms to protect the bales from the damaging effects of the weather during the periods of congestion at such plants in the fall and winter months. There is not a single cotton port in the South where cotton can be properly stored and kept from the damaging influences of rain, sunshine, and wind until it is loaded on the vessel. The majority of farmers who hold all or a portion of their cotton crop on their farms until ready for market leave the bales lying around on the ground, part of the time in the mud, without shelter and practically without any care whatever. In most of the interior markets the limited warehouse space is soon filled, and the balance of the crop, when delivered at such points, is stored on the streets or sidewalks or thrown on vacant lots, there to lie in the snow, sleet, rain, and mud until sold and routed to the big compresses for recompression, when it goes through the same kind of neglect, and then on to the ports for a continuance of such treatment.

Figures 5, 6, and 7 illustrate the methods of storing cotton during the busy season. They are reproduced through the courtesy of the Cotton Publishing Co., of Atlanta, Ga.

A PROPOSED SYSTEM.

How these conditions may be removed and modern business methods applied to the cultivation and preparation of American cotton for market are questions to which the attention of economists is being directed and which are being earnestly discussed by men concerned in the several branches of the industry. There is no dispute as to the fact that the methods of producing and preparing American cotton are wasteful, and there is practically a universal desire for a change that will give promise of reformation. The time is opportune, at least for discussing plans, and encouragement is found in the fact that those actively engaged in the industry, from farmer to spinner, are prepared to cooperate with and support any practical and feasible system the application of which would secure the results desired.

The magnitude of the business, as heretofore explained, makes it difficult and discouraging to individual effort, corporate enterprise, or action by municipal or State authorities, a fact that is accentuated by failure of such efforts. The inadequate covering of the bale, the absence of proper care after baling, the cutting of the covering for samples, the dilatory and expensive method of conveyance, and other conditions that are deplored by the trade are the outgrowth of the system in vogue and are inseparate from it. Efforts heretofore made to bring about reform have been directed to treatment of these symptoms, little attention having been given the responsible cause. Mr. G. R. Hightower, of Jackson, Miss., previously quoted, states:

> The dealers individually are not to be censured too severely for the waste, the extravagance, and the abuse so common in the industry to-day, because no individual can afford to provide a system of warehouses, warehouse keepers, weighers, and shippers for the protection and proper handling of the cotton he buys. No individual dealer handles more than a very small percentage of the cotton in the territory where he operates, and the necessary equipment for the proper care would cost too great an outlay to allow a profit on his business should he provide it. It is therefore a necessity that the dealer should adapt himself to the system in vogue and apply the method in the main used by others in order to make money.

BALING AT GINNERIES.

Proper baling by completely covering with material that will insure protection can be satisfactorily accomplished by compressing at the ginnery, and this is undoubtedly practicable for the large percentage of the crop that is grown under conditions of concentrated production. Indeed, gin compression has been established at a number of points in the cotton belt and on many of the large plantations, with highly satisfactory results. A gin compress will take the output of a battery of four or six gins. It turns out a bale of 500 pounds, 20 by 26 by 54 inches, or 18 by 30 by 48 inches, compressed to a density of 30 pounds to the cubic foot, covered with clean, closely woven burlap, and bound with seven steel ties (figs. 8 and 9). Thus packed at the gin the bale

is ready for market. One of these gin compresses can be installed for $1,500 to $4,500. There are several different makes of gin compresses in operation. At a large plantation visited, located on the Mississippi River and embracing about 9,000 acres, and on which two gin compresses are installed, it was stated that the weight of the burlap and steel ties used, which constitute the tare, is 12 pounds. The burlap covering measures 4½ yards, is 46 inches wide, and weighs 16 ounces to the yard. The ties and buckles, seven in number, each weigh 1 pound. Allowance is made for variations in the weights given. The established tare on the bale recompressed at the large compresses is 22 pounds for mills in Southern States, 24 for New England mills, and 6 per cent, or 30 pounds, for foreign mills. The tare on the Egyptian bale is 22½ pounds. This bale weighs approximately 750 pounds and carries 11 heavy ties. The tare of the Indian bale, which weighs 400 pounds, is 9½ pounds. The latter is 48 inches long, 22 deep, and 17 wide; the former is 51 inches long, 31½ deep, and 22 wide.

RECOMMENDATION OF SPINNERS.

European exchanges adopted the 6 per cent tare in consequence of the character and weight of the covering generally used in the United States. Whether this tare is greater than it should be is a disputed question, and one that gives rise to much irritation and controversy. Investigations at Liverpool and other European cotton centers show that while in individual cases the 6 per cent claim is too high, on the whole it is rather below than above the average weight of covering placed on American cotton sent to foreign markets. There is little doubt that the Liverpool Cotton Association, which is the leading and controlling exchange in Europe, and whose influence is felt in the United States, would rescind the 6 per cent rule and agree to purchase at net weight if the gin compress system should come into general use. This is indicated by formal action on the part of European associations in considering this question. In 1907, nearly five years ago, at the conference held at Atlanta, Ga., between a large delegation of the International Congress of Master Cotton Spinners' and Manufacturers' Associations and leading cotton producers of the Southern States, after considerable discussion, the following resolution was adopted:

> We condemn the bagging now in use; first, because of its rough and coarse nature it invites rough treatment; second, it does not hold the marks; third, on account of its great weight and bulk it entails heavy loss in freight. We therefore recommend the use of a light burlap or covering made of cotton, such as osnaburg, 10 ounces weight per yard, 40 inches wide. We recommend that all planters, wherever practicable, put in as rapidly as possible gin compresses, and in baling of cotton the Egyptian character of bale be adopted, the ties of the Egyptian type, the weight of the bale 500 pounds, the density 35 pounds, and the bale to be marked upon both ends with weight, grade, and staple.

At the meeting of the International Federation held last year at Barcelona, Spain, the question of purchasing net weight was discussed and the following resolution was adopted:

> That this congress confirms the convenience resulting from the net-weight cotton contract, and urges the members of each affiliated association to buy at least a portion of their cotton requirements on its basis, the congress being

of the opinion that only by the adoption of such contract the American cotton producer can be induced to adopt the new system of baling and handling cotton, as previously recommended by the International Federation.

The difference between various kinds of cotton bales is shown in figure 10. On the left is an ordinary gin-box bale, weighing 476 pounds and measuring 55 by 30 by 41 inches; the density is 12 pounds per cubic foot and the tare 20 pounds. Next to it is an Egyptian bale weighing 750 pounds and measuring 51 by 22 by 31 inches; the density is 37.3 pounds per cubic foot and the tare 22 pounds. The third is a gin-compressed bale weighing 585 pounds and measuring 48 by 18 by 35 inches, with a density of 33.4 pounds per cubic foot and tare of 10 pounds. The recompressed bale on the right weighs 595 pounds, measures 56 by 30 by 27 inches, has a density of 22.2 pounds per cubic foot and tare of 24 pounds.

ADVANTAGES OF GIN COMPRESSION.

It is apparent that the European spinners insist on the 6 per cent tare as a measure of protection against the excessive weight of bagging used in the United States. Continuance of the 6 per cent rule is profitable to the exporter on this side of the Atlantic and to the importer on the other side, but is not specially desired by either the spinner or the producer. This view of the matter is sustained by the fact that gin-compressed cotton is now shipped direct from the ginnery to the merchant or spinner in Europe free from mutilations incidental to sampling and free from the charges that attach to the old system.

The writer was shown an account current of a large Liverpool house which gave a statement of the sale of 55 bales of gin-compressed cotton shipped from Montgomery, Ala., by the Farmers' Compress & Warehouse Co. of that city, which may be properly introduced here in part. The statement of account follows:

Nov. 10,	To freight	$182.73	Nov. 28,	By sale FOD	50 B/C.
	Liverpool dues	5.44		By sale COT	5 B/C.
	Quay porterage	3.60		Gross	26,606 lbs.
	Stamping policy	.19		Tare and bands	643 lbs.
15,	Cost of cable	1.82		Net	25,963 lbs.
18,	Warehouse rent	1.68			
	Fire insurance	7.69		Gross	$4,252.25
	Cartage and porterage	10.04		FOD 8 B/C.	
Dec. 1,	Commission ½ per cent	21.46		Country damage	3.12
	Remittance	4,021.87		Balance on interest	1.15
	Total	4,256.52		Total	4,256.52

The gross weight in Liverpool was 26,606 pounds and in Montgomery, Ala., 26,297 pounds, the gain in weight being 409 pounds. It will be noticed that the deduction for tare and bands (bagging and ties) was less than 12 pounds per bale, and that country damage was found in only eight bales. The cotton was sold in Liverpool at 15.32 cents per pound.

Several important advantages over recompression recommend compression at the ginnery. These are greater density and uniformity of package, character of wrapping, ease and economy in transportation, and minimum of tare. A 34-foot box car will carry 50 recompressed bales; 85 gin-compressed bales can be carried in the same space. The burlap covers and completely protects the cotton, which the jute covering of the recompressed bale does not, and permits the

package to be plainly marked in a manner that will not be obliterated. The marking of the bale so it may be identified is a highly important matter. The bill of lading and other shipping documents describe the marks placed on the bale for identification, but if these be obliterated, defaced, or removed by cutting the covering, delivery of the cotton to the purchaser is difficult, sometimes impossible, when a large cargo consigned to numerous buyers is concerned. The recompressed bale rarely reaches its destination in condition to permit recognition of marks.

PROPER MARKING OF BALES.

The character and condition of the bagging as it leaves the large compress preclude proper marking. Moreover, the operation is so rapid and the material employed so inadequate for the purpose intended that the mark, usually placed on the bale while in motion from the compress to the laborer who removes it, is often so smeared before the bale reaches the shed that it is almost useless for the purpose of identification. It not infrequently happens that the mark, or a portion of the mark, is placed over a sample hole.

Several metallic devices have been introduced for the better marking of cotton. These are placed securely on the tie and can not be removed without removing the band on which the tag is fastened. If desired, two or more of these metal tags may be placed on the bale. The number and location of the ginnery at which the cotton was baled is stamped on the tag, thus furnishing means for determining by whom the cotton was packed. The tags are numbered serially so that the ginner may readily ascertain the producer of cotton as to which complaint is made.

CONDITION OF AMERICAN COTTON IN LIVERPOOL.

In a recent report to the Department of State the American consul at Liverpool wrote in regard to the condition in which cotton arrived at that port from the United States:

> It rarely happens that one sees a carefully prepared bale of American cotton, and it is equally as rare to see a carelessly prepared bale among the foreign shipments. * * * The constant complaints with regard to American baling appear to arise from the inconvenience which is thereby caused in handling the bales as well as from damage to the cotton and consequent loss from insecurity of the packing. The inconvenience arises by reason of the marking being so damaged or torn away at times as to make it difficult to determine all of the particular bales which are due to a particular consignee, and delay and difficulty are the outcome. The writer saw on the quays bales which had been practically denuded of covering. It is quite clear from the manifest that a certain number of bales are due to a certain consignee, but there is a loss to some one unless each receives the particular grade of cotton which he has purchased.

The advantages, however, claimed for gin compression are lessened if the bale be subjected to the usual cutting to obtain samples or if the quality of the burlap used for covering be inferior. No manner of packing can be effective if the package be surrendered to such a system. Therefore the substitution of an entirely new system of grading, which will limit the pulling to one sample from each bale before the cotton is covered, and provide that grading shall be done at the time of ginning, is suggested as a tentative plan for the suc-

cessful establishment of a reform so urgently demanded by persons concerned in the cotton industry, and the establishment of which would be the means of saving the $50,000,000 or more estimated to be wasted annually by adherence to the present system. That this is entirely practicable is very strongly disputed by good authority, but the proposed plan seems worthy of careful consideration.

BENEFITS TO TRANSPORTATION COMPANIES.

Compression at the ginnery, it is said, would save at least 50 per cent of the expense that attaches to the present system of recompression at points distant from the ginnery. Preparation of cotton at the ginnery for market would not only result in large economy in the cost of preliminary handling, but would result in further economies in securing reductions in cost of transportation by land and sea, inland and marine insurance, warehousing, etc. The complete covering of the cotton, the density of the package, the superior method of compression, appeal alike to transportation companies, insurance companies, and consumers. To transport 250 gin-box bales requires ten 34-foot box cars. In the same space 500 recompressed bales and 850 gin-compressed bales may be packed. It is estimated that 40,000 cars are required to move the cotton crop promptly under the present system of handling. With gin compression this important work could be done by the use of 25,000 or 30,000 cars, and with great saving in time and expense. Instead of carrying cotton to the distant compress and being detained there for long or short periods, the cars would be loaded at the ginnery or a contiguous point for concentration and proceed direct to destination, or the seaboard if intended for export. Uniformity of the bale would be especially advantageous and economical in ocean carriage. In addition to economy in space the cotton could be packed in the hold without the use of screw jacks, which are now necessary with uneven and ragged packages, this latter performance resulting in damage and loss and further impairment of the package. In an address recently delivered before the traffic managers of the southern railways on this subject Mr. Harvie Jordan, of Atlanta, said:

> Gin compression for the railways would mean a tremendous lessening of the expense of empty freight boxes standing on sidings and rotting for six months of the year, or during the heavy moving of the cotton season. Two-thirds of the present rolling stock employed in the movement of the crop during six months of each year could be diverted to other uses, or saved to the operating expenses of the railway companies.

ESTIMATES FROM RAILROAD MEN.

An officer of the freight department of the Illinois Central Railroad, which runs through the cotton belt, and which hauls a large quantity of cotton, has furnished the following illustration of the car space and time now required to handle cotton between the farm, the compress, and the port of New Orleans:

> Cotton originating at Duck Hill, Miss., if shipped north will be compressed at Grenada, 12 miles distant; if shipped south, it will be compressed at Winona, also 12 miles distant. The average time consumed in the conveyance of 100 bales to either of those places is 2 days, and 4 box cars are required for

the service. Should there be congestion at either point, which is likely during the three months of the busy season, the cars will be held 3 or 4 days before they can be unloaded and moved out of the compress yard. Assuming that only 2 days be thus consumed, the shortest possible time, that is equivalent to 1 car for 8 days. Moreover, to carry the cotton to its destination, north or south, 2 cars must be run into the compress and be there loaded, the average time occupied in this way being 3 days. From the compress point to Memphis or New Orleans is 2 days. Thus 2 cars are occupied 5 days, equivalent to 1 car for 10 days, and adding the 8 days for conveyance to the compress, 18 days in moving 100 bales from the initial point to Memphis, the point of concentration, or New Orleans, the port for ocean shipment. A 40-foot car loaded at Duck Hill with 100 bales will reach Memphis or New Orleans in the same time (2 days). It will thus be seen that one 40-foot car employed for 2 days on gin-compressed cotton will do the same amount of work that requires 18 days under the present system.

Mr. J. H. Marion, of Chester, S. C., a railroad man who has given much study to this subject, in speaking of gin compression, thus epitomized the advantages that would come to transportation companies by its general adoption:

One long haul from gin to port versus six shorter hauls; part of the cost of unloading and reloading freight cars at compress points; loss of time (demurrage) of freight cars arising from unloading and reloading; cost of shunting and marshaling trains; locomotives, labor, fuel, and other stores at compress points; shorter trains to haul and consequent reduced trackage; reduction in number of locomotives necessary to perform the same work; saving in space and in consequent cost of sidings, goods staging, and warehouse construction; not to mention the matter of interest upon the capital cost of the same, nor the items of cost which come into their account as working expenses.

Mr. G. R. Bennett, of Austin, Tex., who is largely interested in the cotton industry, speaking of the necessity for the introduction of improved methods of handling cotton, said:

There is no question but that there is a demand for better handling of cotton. This any handler will tell you, regardless of his interests or his prejudices. The spinners of the world are demanding an improved bale and a better handling of American cotton, which is the only cotton that is handled in a slipshod, ragged way. All other cotton-raising countries have long since adopted improved methods of baling and have a perfectly covered and well cared for bale. The American is the only bale that is permitted to lie around in the weather exposed to damage and stealings and every character of waste.

GRADING AT THE GINNERY.

It is suggested that ultimately some plan for grading at the ginnery may be devised. It is not possible to assume that the present unfortunate conditions will be permitted to continue indefinitely. The presentation of some system that will improve these conditions is an urgent need at this time. For reasons heretofore explained it is believed that great difficulties confront an effort for change by individual or locally combined effort.

The suggestion has been made and has received approval in many quarters that the Federal Government should establish a system of grading, certifying, and warehousing cotton, the acceptance of which should not be made mandatory but left optional with those whom it is intended to serve. While the Department of Commerce and Labor is on record as disapproving any plan to materially extend Federal supervision over the cotton industry, it may be useful to consider the results which would follow from the establishment of an authoritative system of grading cotton at the ginnery.

Assuming that under the proposed system the United States Government, through the Department of Agriculture or some combination of commercial interests which would command universal acceptance by those concerned in the handling and marketing of cotton, should appoint experts to grade cotton—these appointments to be made under some plan that would tend to insure the employment of qualified graders—only men of high character, having large experience in this field, possessing the requisite technical knowledge and training, and whose judgment would be generally accepted without hesitation should be eligible for appointment as graders. The official grading proposed should be done at ginneries immediately following compression and before the bale is wrapped, and a certificate would be given the owner setting forth in detail the quality of the cotton, specifying weight, class, type, grade, length, softness, fineness, and strength of staple, together with the place of production, number of the ginnery, and such other information as might be helpful to the purchaser. In this way the producer would secure a disinterested and accurate analysis of his cotton set forth in an authoritative certificate which might be accepted for its face value by those desiring to purchase, and which could be used by the farmer with the local banks for collateral for a loan in case it was desirable to hold the cotton. If not immediately removed after ginning, the cotton could be stored in a warehouse and be subject to the order of the owner. The merchant buying for future delivery would be assisted, it is suggested, by this system of authoritative designation of the grade of each bale.

While there are difficulties too numerous to outline in this report concerning the establishment of any such system, it is suggested that some such system would be highly desirable as a standard toward which the present efforts for the improvement of the handling of the cotton crop should be directed. The many objections to such a tremendous extension of the share of the Federal Government in the business of handling the cotton crop may render it entirely outside the region of practicability. Some approximation, however, of this plan to establish authoritative grades and to assure a better protection for the cotton crop than is now afforded may be secured by concerted efforts by those who seriously desire to improve the existing conditions.

OPINION OF AN EXPERT.

Several years ago Mr. D. A. Tompkins, of Charlotte, N. C., who has made careful study of the growth of cotton and of the several processes through which it passes between the farm and the mill, and whose practical knowledge acquired in the active management of mills makes his testimony valuable, delivered an address at Shreveport, La., before the National Cotton Convention, in which the issuance of a certificate somewhat similar to that herein outlined was advocated. In the course of his address, Mr. Tompkins said:

> I believe that the practical monopoly which we have had in the past can be continued if we will protect the conditions surrounding the production of cotton against menacing influence, and if we bring about, in place of the menaces, fostering influences. The cotton plant is one of the most delicate of the agricultural products. It is produced in a climate that varies enough to make the variation in cotton production range from 150 pounds of lint cotton

per acre to 225 pounds of lint cotton per acre. One frost might make this difference from one year to another because of the extreme delicacy of the plant and of extreme variations in climatic conditions. We furnish to the world one year a crop which is overwhelmingly big, and the next year a crop which is insufficient to supply the ordinary demands. This creates a condition in which the speculator holds high carnival in dealing in cotton. The legitimate merchant and the manufacturer are made to turn gambler whether they will or not, and the ordinary course of trade is tremendously disturbed. The average production for 10 years, if it could be maintained, would bring about an average price. Inasmuch as the climate forbids this from one year to another, it is important that the production shall be, by some artificial means, brought to more or less of an average, and thereby the price would be brought to an approximate average.

NEED OF A WAREHOUSE SYSTEM.

I believe this might best be done by the development of a system of warehouses which did far more than shelter and care for the cotton. Existing warehouses simply issue a receipt for a bale of cotton. No effort is made to state what kind of cotton the receipt stands for, nor does the warehouse company assume any responsibility for the grade, weight, or anything else connected with the cotton. Insurance is higher than it ought to be. I believe if a comprehensive warehouse company would engage the best graders to be had, and would issue a certificate in which every factor relating to the bale of cotton was accurately entered, and the warehouse company stand responsible for the description of the cotton as given in the receipt, that such a receipt could be traded in to better advantage than the bale of cotton itself. The purchaser of the receipt in Carolina, in England, or in Germany would know more about the particular bale of cotton in question from the receipt in hand than he would know about it if he saw the bale of cotton.

Cotton being one of the very best collaterals on the market, such receipts standing for the cotton exactly, might be traded in in the financial institutions of the whole world. Thus it would be feasible to bring cotton within the reach of all the surplus money of the world, and when there was a large crop the surplus would undoubtedly be carried over by financial institutions as investments until a small crop should bring the price to an average. It would save the forcing of the surplus onto the market, and by proper construction of warehouses, proper protection against fire, and building in proper units, the cost of carrying cotton could be very much reduced by reduction of insurance, and by reduction of interest rate in consequence of the certificate being an accurate representation of the cotton itself, and being as good for money in Providence or Liverpool as in the town in which the warehouse is located.

VALUE OF AN AUTHORITATIVE CERTIFICATE.

I exhibit a receipt which not only stands for a bale of cotton but gives the general classification, the grade, the length of the staple, the degree of tinge, the degree of softness, the degree of fineness, and all these points are given in accordance with the judgment and the skill of the best and most expert graders obtainable. Therefore the record written by the expert would make a certificate representing a bale of cotton stand for more to a purchaser than if an average inexpert purchaser could see the bale of cotton himself. This certificate would stand for more to a banker in Liverpool or in Bremen than the cotton would to the average man who was in the town where the cotton was located and he could see the cotton. It would, in addition to having the record of an expert's judgment on every feature of the particular bale of the cotton, also have the backing of a responsible company guaranteeing this record. Such a system of warehouses, with such a receipt, would tremendously simplify the purchase by a millman of cotton in warehouse, no matter where located in the cotton-growing district. The European spinner by the purchase of these certificates could become the owner of cotton in Memphis with absolute confidence that, with a certificate in hand, he knew more about the cotton than if he could see it in Memphis, and with the further absolute confidence that the responsibility of the warehouse company insured his getting the cotton whenever he wanted it, and yet equally insured its safe-keeping for him as long as

the owners of the certificate wanted him to do so. By making it feasible for a millman to buy cotton from the owner in warehouse outside the territory, and by bringing cotton into shape where it could be held as an investment and the surplus carried over from one season to another, speculation would necessarily have a much narrower field of operations than now and the cotton spinner would have an infinitely better situation in respect to buying cotton.

The foregoing utterance was made in December, 1904, nearly eight years ago. Since then the cotton crop has grown in magnitude and value, but no material changes have taken place in methods of preparation for market. The lapse of time, additional study, and further practical experience have strengthened the conviction of Mr. Tompkins that the service of a competent, powerful, and trustworthy agency is needed to initiate and carry on a movement for the establishment of an organization that will inaugurate the reform so urgently desired and so imperatively needed. In discussing recently with Mr. Tompkins his warehouse and certificate proposition he declared that all men familiar with present conditions of producing and marketing cotton and interested in bettering these conditions were prepared to cooperate with any plan for organization that appeared to be practical.

FORM FOR CERTIFYING GRADES.

That portion of the certificate devised by Mr. Tompkins devoted to the description of the cotton to be warehoused could be adapted to a descriptive certificate issued by the officer who would grade cotton offered for inspection. The first part of the Tompkins certificate is after the usual form of warehouse documents of this character. The form for describing the cotton passed upon follows, and it will be observed that the grades and intermediary grades enumerated in the certificate number 30. This detail is doubtless furnished to meet any possible condition that may arise in grading, and not because of any existing necessity for so extended a list.

Description of Cotton.

Classification.	Grades (American standard classification).		Length of staple (inches to millimeters).				NOTES.
	No. Grade.	No. Grade.	*Inches.*	*Millimeters.*	*Inches.*	*Millimeters.*	
1. Sea Island.	1. Fair.	19. Good middling tinged.	3–8	9.525	1	25.4001	Tinges:
2. Egyptian.	2. Strict middling fair.	20. Strict middling tinged.	7–16	11.1125	1 1–16	26.9876	Figure 1 represents a very slight tinge.
3. Rivers.	3. Middling fair.	21. Middling tinged.	1–2	12.7	1 1–8	28.5751	Figure 10 represents a maximum tinge.
4. Benders.	4. Barely middling fair.	22. Strict low middling tinged.	9–16	14.2857	1 3–16	30.1626	Intervening figures represent intermediate tinges from 1 to 10.
5. Peelers.	5. Strict good middling.	23. Low middling tinged.	5–8	15.875	1 1–5	31.751	Softness of staple:
6. Uplands.	6. Fully good middling.	24. Strict good ordinary tinged.	11–16	17.4625	1 5–16	33.3385	Figure 1 represents softest staple.
7.	7. Good middling.	25. Fully middling stained.	3–4	99.05	1 3–38	34.9251	Figure 10 represents hardest staple.
8.	8. Barely good middling.	26. Middling stained.	13–16	20.6475	1 7–16	36.5126	Intervening figures represent intermediate degrees of softness in proportion to figures.
9.	9. Strict middling.	27. Barely middling stained.	7–8	22.225	1 1–2	38.1001	Fineness of staple:
10.	10. Middling.	28. Strict low middling stained.	15–16	23.8125			Figure 1 represents the fineness of best Sea Island.
	11. Strict low middling.	29. Fully low middling stained.					Figure 10 represents the coarsest fiber.
	12. Fully low middling.	30. Low middling stained.					Figure 5 represents good grade of American Uplands.
	13. Low middling.	31.					Intervening figures represent intervening degrees of fineness.
	14. Barely low middling.	32.					Strength of staple:
	15. Strict good ordinary.	33.					Figure 1 represents greatest strength.
	16. Fully good ordinary.	34.					Figure 10 represents weakest.
	17. Good ordinary.	35.					Intervening figures represent intervening degrees of strength.
	18. Strict good middling tinged.						

Bale No.	Weight.	Classification.	Grade.	Tinge.	Length of staple.	Softness of staple.	Fineness of staple.	Strength of staple.

The Tompkins certificate includes all grades that are known in the classification of cotton. Those designated as "strict" are half grades and those designated "rarely" and "fully" are quarter grades. In the classification made by the New York Cotton Exchange November 15, 1911, and which remained in force until September 12, 1912, six full grades are designated, of which three are above the basic grade, viz, good middling, middling fair, and fair; and two are below basic, viz, low middling and good ordinary. In the lower classifications no grade is given below low middling tinged, except middling stained. The Department of Agriculture, in fixing its types, provides for nine grades, of which four are above and four below middling, the basic grade. In the "spot" market 13 distinct grades are generally recognized, in which are included three half grades above and three below middling. These grades are confined to what is known as white cotton, excluding those grades designated as "tinged" and "stained."

GRADING AND CERTIFYING.

In 1907 the Department of Commerce and Labor, through the Bureau of Corporations and by direction of the House of Representatives, made a thorough investigation of the causes of fluctuations that had recently occurred in the price of cotton and of the methods of cotton exchanges in dealing in futures. The result of the investigation was presented to Congress. It embraces more than 1,000 printed pages and is published in five parts. In his letter, under date of May 29, 1908, submitting parts 2 and 3, Herbert Knox Smith, Commissioner of Corporations, said:

> There should certainly be a system of uniform grades throughout the cotton trade if possible. It would greatly simplify the business and stop a number of abuses. The practical difficulties in the way of arriving at such a system are considerable, and probably the best that can be done at present is to make a persistent effort to approach gradually such an ideal as near as may be.

In the report referred to numerous men actively engaged in handling cotton are quoted on the various topics discussed, and in connection with classification for delivery on contracts expression favorable to governmental organization and direction was given by some of the persons consulted. A merchant of Savannah, Ga., is quoted as follows:

> There is no reason why cotton should not be officially classed and weighed bale by bale in the same manner as the quality of naval stores in the South is determined by official classers whose marks are not allowed to be obliterated, or as canned goods in the North and West are labeled by Government inspectors, which labels can not be effaced without leading to litigation.

A merchant of Augusta, Ga., one of the largest interior markets in the country, and at which upward of 500,000 bales were handled this season, said:

> We should have uniform rules to conduct the cotton business from North Carolina to Texas. We should have uniform classification, and we should have such rules and classification made and enforced by a convention of southern exchanges so that we would deal with the manufacturers of this country and Europe upon the same basis, knowing no New York or Liverpool or Bremen rules, but announcing to the world the basis on which our product is sold. We would then hear nothing more of New York middling, or Liverpool middling, or Augusta or Savannah or Charleston middling, but we would have one set of grades agreed upon and would offer our cotton for sale upon such grades.

UTTERANCES OF COTTON EXCHANGES.

The practicability and desirability of a uniform system of grading and certification have been affirmed by many representative cotton men of the South and the plan has also received approval from prominent members of the New York and New Orleans Cotton Exchanges. For many years, in order to facilitate the holding of a stock of cotton at New York, it has been urged that the warehouse and certifying system of that city should be extended to southern markets under control of the New York Cotton Exchange. It was proposed that cotton stored in southern warehouses should be sampled when stored and the samples forwarded to New York for inspection by the inspection bureau of the exchange. Upon certification the cotton was to be tenderable on contracts without being brought to New York. Several reports on this matter were made by committees of the exchange. The advantages of the proposed plan were explained in a report made by a special committee in 1903, in which it was said:

> It will gradually establish a uniform grade of cotton. The certificate will assure the buyer that the cotton is all in the warehouse as stated and that the grade is guaranteed. Reclamations will be reduced to a minimum, especially for grade. The planter or dealer will let the cotton stay in the South at cheap storage until he sells to mills and exporters. Duplicate samples will enable the owner to offer his certificated cotton in any market or to any buyer. The buyer can take and pay for the certificates and leave the cotton where it is till he is ready to order it elsewhere or resell it on contract.

It is true the purpose of extending the New York warehousing system to the South was to promote and facilitate operations in sales for future delivery on contracts, but the standardization proposed in this case can be applied to grading and certifying cotton at the ginnery, when this may be practicable, and having it stored there and at other convenient points where suitable warehouses under responsible direction may be located. If it be practical and desirable to grade and certify cotton stored at points of origin for the convenience and profit of merchants and brokers at New York or other distant places, it would seem to be equally so to institute similar processes for the benefit and encouragement of the producer and those for whom primarily the crop is intended.

July 20, 1912, at a meeting of the representatives of 41 cotton exchanges and others interested in the marketing of cotton, at which differences between certain European and American exchanges in regard to arbitration were considered, the following was among the resolutions adopted:

> We recommend that all cotton interests work toward the adoption of a standard of classification for American cotton of all growths, which shall be made world wide.

GIN COMPRESSION AND ADEQUATE WAREHOUSES.

Warehouses of modern fireproof construction for storing baled cotton, located at or contiguous to the ginneries and at the south Atlantic and Gulf ports from which shipments are made, are urgently needed. The construction of such warehouses would logically follow the inauguration of a system of gin compression. Adequate ware-

housing would not only safeguard the product but would be a decided convenience in its transportation and contribute materially to reduce the present charges for insurance and handling. At none of the points of concentration, including the ports for ocean shipments, are adequate accommodations provided for storage, and in some cases no thought seems to have been given to this important matter, owing, doubtless, to the prevalent belief that exposure can not damage cotton. At many of the points of concentration sheds of cheap construction are provided which afford partial protection, but at every point in the busy season (October, November, December), when fully one-half of the crop is in sight, the bulk of the cotton is exposed for long periods without shelter. The illustrations accompanying this report show the manner of exposure and the extent to which it prevails.

WAREHOUSING BY FARMERS.

The Farmers' Union, an organization of producers which extends over the cotton belt and whose membership aggregates many thousands, several years ago inaugurated a warehouse system, the main purpose being to secure a minimum price by withholding cotton from market. This object was not realized, although the warehousing has been somewhat helpful in obtaining better prices for producers. The movement was given liberal support by farmers and has resulted in the construction of perhaps 1,500 warehouses, all of which are owned and operated by the Farmers' Union. These warehouses, scattered over the cotton States, are of various sizes and construction, but utterly inadequate to house even a very small fraction of the crop, considered in the aggregate, although in particular localities the bulk of the local product might be sheltered. This warehouse system contemplated storing, insurance, grading, certifying, issuance of warehouse receipt, and advancing money. Beyond securing the construction of warehouses, the system has not met with the success anticipated, and the officers of the Farmers' Union are now seeking for plans to make it more effective and profitable.

WEAKNESS OF THE SYSTEM.

One of the principal obstacles to the success of the system is the fact that it consists of independent units, the effectiveness and influence of each being necessarily restricted to its immediate locality. Thus the receipt issued by the warehouse for cotton held might be accepted by a local bank, but would not be acceptable beyond the neighborhood of the issuing warehouse. A combination of the units and the establishment of a central body, say in each State, with modern buildings for storing, modern appliances for economical handling of cotton, and with abundance of physical assets, would materially strengthen the system and extend its influence, and with the active support of producers and wise direction by their representatives the system would ultimately attain a standing that would insure general recognition for its certificate in many of the principal centers of the cotton trade. But while such combination would extend the field for operations its effectiveness would be limited, as is the case with every private enterprise however strong financially.

WORK NOW PERFORMED BY THE GOVERNMENT.

The work already performed by the Government and that now in progress with the object of improving present methods of cultivating cotton, of safeguarding the crop, and establishing a comprehensive system for its economical handling promises gratifying results. The Department of Agriculture, under authority of law, with the aid of a committee of experts representing every branch of the cotton industry, established a set of standard grades, nine in number, which have become an official standard for classification so far as the standards have been given recognition by the exchanges. Exact duplicates of the official grades have been prepared by the Department of Agriculture, as required by the law, and these are furnished at a fixed price to cotton exchanges, libraries, schools, and others interested. The standards have been accepted by the cotton exchanges of New Orleans, Galveston, Memphis, Charleston, Mobile, Natchez, Little Rock, Macon, and St. Louis. New York has not given the standards formal approval, but is at liberty to apply them when convenient or desirable. The law does not provide for compulsory adoption. Those exchanges that have not adopted the standards urge that the samples from which the grades were made up were selected from cotton grown in the Mississippi Valley, and that they do not accurately represent cotton grown in other sections of the country. It is admitted that the standards have value and are helpful in classifying cotton grown in the section from which the grades were made up, but it is held that these grades can not so fairly be applied in determining the quality of Atlantic States upland cotton. It should be said in this connection, however, that during the first year practically all the cotton used by the Department of Agriculture in making up the types came from the upland districts of Louisiana, Mississippi, Texas, and Oklahoma. All the collections of grades now issued by the department contain Atlantic States upland cotton.

UTILITY OF OFFICIAL STANDARDS.

Established grades have special value with exchanges and local merchants in settlement of disputes, but producers contend that the official standards are of little practical value to them, as they are still obliged to dispose of their cotton under the methods that have always obtained and to the same interested expert buyers, whose judgment they are forced to accept. An active market, with lively competition among buyers, enables the producer to secure better prices, but as a rule, in absence of uniformity of quotations in the three principal markets, New York, New Orleans, and Liverpool, and inability to accurately class his cotton, the producer is obliged to sell at the price fixed by the expert. It is suggested in connection with an official standard for classification that it is but a short step to the appointment of Government officials to determine and certify the grade and quality of the cotton, for the protection of the producer and the benefit of the final purchaser who buys for consumption. In brief, it is contended that the Government standards advantage the large class that stand between the farm and the mill but contribute little, if any, assistance to the producer.

CULTIVATION OF COTTON BY TYPES.

The demonstration work being done by the Department of Agriture and the plans in formulation for its extension are certain to prove of the highest value to producers of cotton. Under existing conditions many farmers aim to produce the largest quantity of cotton regardless of quality. The farmer is fully cognizant of the fact that different values attach to different grades, but has not the expert knowledge required to differentiate between them, and therefore has no refuge against the trained expert who analyzes and fixes a price for his cotton. By experimentation the Department of Agriculture has demonstrated that certain types of cotton can be more successfully grown in certain localities as regards both quantity and quality. Therefore efforts will be made to induce farmers to plant the type that will bring them the best and most profitable return. By this plan types would tend to become associated with certain geographical sections, farmers would acquire thorough familiarity with all the qualities of their product, incentive to still higher achievement would be incited, and the producer would be freed in a large measure from the workings of the present intricate and arbitrary system of classification.

BENEFITS ACCRUING TO FARMERS.

The benefits that would accrue to the farmer and advantages that would come to trade generally from the cultivation of selected types in particular sections and by entire communities must be apparent to all who will give the matter serious consideration. This system of cultivation has been adopted by individual producers in several of the cotton-growing States with beneficial results, notably in South Carolina and Texas. In the former State the authorities are directing the attention of farmers to the importance of cultivating certain types. Col. E. J. Watson, commissioner of agriculture, briefly refers to the development of varieties of upland long-staple cotton for planting, in all sections of the State, in his annual report covering operations for the calendar year 1911. The commissioner says:

> During the past year experiments with these varieties of cotton were extended and staple was developed from 1¼ to 1⅝ inches in length, with the yield three times as great as Sea Island at a less cost of production and a yield per acre practically equal to any of the varieties of upland cotton. The plants also developed drought-resistant and early maturing qualities that were scarcely expected. * * * For all of this class of cotton grown in this State this year prices averaging approximately 17½ cents per pound have been paid. There is now a great demand for the selected seed in order to enable the producer to raise this staple and deal directly with manufacturers at home.

The results obtained in South Carolina from growing selected types accentuate the wisdom of the Department of Agriculture in pushing its plans for the cultivation throughout the cotton belt of types best adapted to particular sections.

COOPERATION OF GOVERNMENT DEPARTMENTS IN WORK.

It is perhaps outside the province of this inquiry to discuss policies that should govern and methods that should be followed in the cultivation of cotton, yet the production of the crop is so closely allied

with the handling after it has been gathered that consideration may with propriety be given the efforts being made by the Department of Agriculture in this direction. The application of scientific methods to cultivation will undoubtedly result not only in producing more and better cotton, but in the uplift of the farmer materially and morally, the elimination of much of the wastefulness that attends the present system of marketing, and in the promotion of trade at home and abroad in this great national staple. The growing of cotton of certain types in particular localities in which climatic conditions are favorable to such types is not only rational and logical, but will prove educational, and therefore highly profitable to the farmer. The fact that the general average output per acre is ordinarily about 180 pounds of lint cotton, and that, except in the case of a sea island growth, it is largely without definite quality or character, furnishes strong and sufficient reason for remedial action. It is believed by many who have given thought to this general subject that such action can be best inaugurated by the Government through the Departments of Agriculture and of Commerce and Labor, the former directing effort to the adoption of better methods of cultivation and the latter to the expeditious and economical handling of the cotton when ready for market.

FORCEFUL ILLUSTRATIONS.

Numerous illustrations could be cited to establish what can be done with proper cultivation. The Department of Agriculture has given a number of practical demonstrations, and the agricultural departments of several of the States have given similar demonstrations. As previously explained, demonstrations have been made at various points in the cotton belt of the value of planting certain types of cotton. As a result of these demonstrations numerous cases are reported of largely increased output of a high class of cotton, thus establishing that the yield can be increased without undue increase in the cost of production. Evidence that more and better cotton can be produced by improved methods of cultivation is furnished by sales made this season at Clarksville, Tex. What is known as Red River County seed is largely planted in that State. This type has been found to produce the best results, and Texas planters are being urged to employ it. This class of cotton sold at Clarksville for 18 cents per pound because of its staple, while cotton of equal grade brought the same day only 10 cents.

According to the revised estimate of the Bureau of Statistics of the Department of Agriculture, the area planted in cotton in 1911 was 36,681,000 acres, of which 636,000 acres were abandoned, leaving 36,045,000 acres as the area from which the crop was harvested. The average production of lint per acre in 1911 was 208 pounds, as compared with 171 pounds in 1910. The last crop not only exceeded that of any previous year in aggreate weight and in average yield per acre, but prices obtained were generally satisfactory to the growers.

GRADING AT THE GIN.

There is reason for believing that an organization on lines suggested in this report would not only tend to cure the evils described but

would be the active means of removing other evils that are the outgrowth of the present system. Moreover, it would tend to improve the quality, increase the value, and guard the integrity of the cotton crop by eliminating the nondescript grades, few of which are fit for spinning and many of which would find their way to paper mills and similar utilities. Knowing he would get a better price for good quality and that his cotton would be accurately graded, the farmer would be impelled to grow the higher types and would exercise greater care in picking and proper vigilance in protecting the cotton after leaving the ginnery. Cultivation by communities of types best adapted to their several localities, compression at the ginnery, grading and certifying by competent authority, go to the root of the existing evils.

PRACTICAL DEMONSTRATION BY COTTON CLUBS.

The Department of Agriculture contemplates entering a new line of activity to improve both the quantity and quality of the cotton crop and to educate the farmer in the fundamentals of growing and grading the staple by the establishment of cotton clubs similar to the corn clubs inaugurated with success several years ago. Boys constitute the bulk of the membership of the corn clubs and it is proposed to form cotton clubs from the more advanced and successful of these boys.

The establishment of corn clubs demonstrated to southern agriculturists the possibilities of corn growing in the South and stimulated an interest in agriculture, especially the production of home supplies. Those in charge of the Farmers' Cooperative Demonstration Work believe that the best of the corn-club boys can now progress from corn to cotton production, thus widening their useful knowledge and giving them the basis for a thorough system of agriculture. The lessons of preparation, seed selection, and intensive cultivation will be continued as applied to cotton, and in boll-weevil sections the boys will be shown the department's methods of raising cotton under boll-weevil conditions.

Members of cotton clubs will be expected to work at least 2 acres, and practically every boy will thus grow enough seed cotton to make a bale. It is not so important that a large number of boys be enrolled the first year as that every boy's crop be a first-class demonstration By the same kind of persistent work that has been done in the corn clubs the boy can grow at a good profit, even in the worst infected boll-weevil sections, a large yield of improved cotton. This has already been done in Louisiana and Texas.

It is expected that the boys will study grading and standardization, so that they will be able to classify and mark their crops intelligently. With the theoretical knowledge acquired at the State agricultural colleges and farmers' institutes, these practical demonstrations by the Department of Agriculture through its well-equipped field agencies will in a comparatively short time qualify the farmer to obtain the very best results from cultivation and enable him to determine with approximate accuracy the quality and value of his crop.

CLASSIFYING AND GRADING.

The classification and grading of cotton is an important, comprehensive, and intricate business, requiring thorough knowledge of the material, long training, skill, and good judgment. Ordinarily those engaged in the business of handling cotton can determine with approximate accuracy the general character or grade, but for the purpose of spinning yarn the judgment of the expert is essential, length, strength, and fineness of the staple being important factors with the spinner. The grade of cotton in the main is determined by the degree of color and the quantity of foreign matter which it contains, such as dirt, leaf, etc., conditions that are readily recognized upon inspection by the buyer. Length and texture of staple, however, are not given as great consideration in the initial dealings as their importance would seem to require, nor are they considered by the classification committee of the New York Cotton Exchange unless there be a specific request for their inclusion.

In connection with the subject matter of this report the classification and grading of cotton as now performed has special interest and a brief description of methods that obtain may prove helpful in studying the proposition to introduce a new system of grading that will have the authority and stamp of the Government. The difficulties that attend grading are plainly set forth in the report of the Bureau of Corporations on Cotton Exchanges. In Part I of that report it is explained that the classification of cotton can not be performed with absolute accuracy; that no two experts would class a large lot of cotton of assorted grades exactly alike, and that the same expert, classing a large lot of cotton twice, probably would not return exactly identical classification. The report continues:

METHOD OF CLASSIFICATION.

The classification of cotton is almost entirely by the eye. There are no mechanical means for performing this work. The differences of cleanliness, amount of leaf, and amount of color are so gradual that it is exceedingly difficult, in classing cotton into the half grades, to determine exactly where each individual bale should be placed. The difficulty increases as the grade of the cotton falls below middling. With the grades of middling and above, it is a much simpler matter to class cotton with reasonable accuracy. What might appear to be very unimportant conditions exert a material effect upon classification. Thus, a passing cloud may easily influence a classer, quite unconsciously, almost to the extent of a quarter of a grade. When snow is on the ground it is very difficult to class cotton if the light is reflected upon the cotton or into the eyes of the classer. Still again, very few bales of cotton are exactly uniform in character, so that if two small samples are taken from different parts of the same bale they might easily show a decided variation. It is customary in the New York market, where two samples are drawn from each bale, to reject the higher sample. Even a single sample of a few ounces, however, may not be absolutely uniform in character. When it is stated that a bale of cotton weighing, say, 500 pounds represents approximately the yield of 2½ acres of land, and that picking, on account of the low-grade labor employed,

is often carelessly done, it is easy to see how classification based on a sample of only a few ounces may give rise to much dissatisfaction.

What might appear to be very unimportant conditions exert a material effect upon classification. Thus, a passing cloud may influence a classer, quite unconsciously, almost to the extent of a quarter grade. When snow is on the ground it is very difficult to class cotton if the light is reflected upon the cotton or into the eyes of the classer.

RELATIVE VALUE OF GRADES IN THE NEW YORK EXCHANGE.

The basic quality of cotton is known as middling, and all quotations and sales are made on and from that basis. Classification is made and grades are established by a committee of experts employed by the New York Cotton Exchange, and the action of this committee is given recognition by the trade and governs all deliveries and sales, whether "spot" or "futures." The classification is made in September and November of each year, and the latter stands good until September 12 of the year next following. The difference in values of the several grades is fixed by the classification committee. The price varies according to the supply and demand, but the values fixed by the committee for grades above and below middling are plus or minus the market price for middling and are permanent for the time being. The differential is established by points, each point being the equivalent of one one-hundredth of a cent. Thus, if cotton be quoted at 10 cents per pound, fully middling, being rated 15 points above middling, would command 15 cents per hundred pounds or 75 cents per bale over a bale of middling. On the other hand, for barely middling, an "off" grade, the price would be 17 points below, or 85 cents per bale less than middling.

The several grades established by the New York Cotton Exchange for the year ended September, 1912, and their relative values are given in the table following. The grades above middling are "on" or plus, and those below are "off" or minus the current price for middling, the basic quality. A column is added showing the increased value attaching to the bale of 500 pounds according to the differentials. The price for middling is placed in the table at 12 cents per pound, to which the differential on the basis of each point being equivalent to one one-hundredth of a cent, should be added.

Grades.	Points on (+) or off (−).	Increase (+ or decrease (−) in value of bale.
Fair	+1 5	+$8.75
Strict middling fair	+150	+ 7.50
Middling fair	+130	+ 6.50
Strict good middling	+ 80	+ 4.00
Fully good middling	+ 68	+ 3.40
Good middling	+ 56	+ 2.80
Barely good middling	+ 40	+ 2.15
Strict middling	+ 30	+ 1.50
Fully middling	+ 15	+ .75
MIDDLING (12 cents per pound)		
Barely middling	− 17	− .85
Strict low middling	− 35	− 1.75
Fully low middling	− 55	− 2.75
Low middling	− 80	− 4.00
Strict good ordinary	−140	− 7.00
Good ordinary	−210	−10.50

The foregoing grades constitute what is known as white cotton. Following are the "tinged" and "stained" grades, the basis being middling, 12 cents per pound, as in the former table:

Grades.	Points on (+) or off (−).	Increase (+) or decrease (−) in value of bale.
Strict good middling tinged	+ 43	+$2.15
Good middling tinged (same as middling)		
Strict middling tinged	− 15	− .75
Middling tinged	− 30	− 1.50
Strict low middling tinged	− 80	− 4.00
Low middling tinged	−100	− 5.00
Middling stained	− 90	− 4.50

Under the rules of the New York Cotton Exchange delivery of cotton purchased for future delivery may be made at seller's option on three days' notice to buyer. Delivery of any grade may be made from good ordinary (white) to fair, inclusive; and if tinged, not below low middling tinged; if stained, not below middling stained. The price is for middling with additions or reductions for other grades according to the rates existing on the afternoon of the day previous to the date of notice of delivery. Liverpool classification for middling and all grades above is about one-fourth grade lower than New York classification, and for grades below middling one-fourth to one-half grade higher than New York.

GOVERNMENT TYPES.

The nine types selected by the Department of Agriculture, beginning with the highest, are: Fair, strict good middling, good middling, strict middling, middling (basis), strict low middling, low middling, strict good ordinary, and good ordinary. These types were established by a committee of experts in accordance with the act of Congress providing for the work, and, as explained in another part of this report, are generally accepted by those actively engaged in the buying and selling of cotton. They are not intended to determine length, strength, and fineness of staple, but to determine color and cleanliness of the cotton. They have special value in making comparisons to decide types, and are used much in the same manner as samples of fabrics are employed in "matching." Objection is made that while these Government types have value in determining the general quality of cotton grown in the section from which the standard types were taken, they can not be used with accuracy in classifying cotton grown in other sections.

The confusion in standards of various markets is shown in the following statement from a North Carolina merchant which, it should be mentioned, was made before the Government types were selected:

> Cotton from different sections represents different values. For instance, middling cotton from Mississippi is given preference over middling cotton from Georgia, and middling cotton from Georgia will bring a higher price than middling cotton from North Carolina. That is owing not only to a difference in staple but in the general character of the cotton—what we call the "body" of the cotton. * * * The Mississippi cotton, for instance, has the heaviest

body and the strongest fiber of the cotton of any State east of the Mississippi River, unless it be Louisiana. Georgia cotton has about the same body as Carolina cotton, but better staple. But the grade of the cotton is not determined by the staple nor the body of the cotton, but by its character as to cleanliness and color.

COTTON REQUIRED BY MANUFACTURERS.

Each manufacturer requires a certain grade and type of cotton to produce his particular class of goods. When a manufacturer makes a small range in numbers of yarn, or is confined to one or two different grades of fabrics, only one grade of cotton will be needed. When, however, a manufacturer makes a wide range of yarns and fabrics, different grades of cotton are frequently used. In the first case it will be necessary for the manufacturer to have as nearly as possible even-running bales. To have a mixture of cotton—that is, to mix the longer with the shorter staple—would cause a considerable amount of trouble, particularly if the cotton should be mixed together. Any mixing of long and short staple would mean a loss of production with an additional amount of waste in the making of yarns. This occurs in mills where the mixing of cotton does not receive the particular attention which should be given it. Inability to mix and successfully spin cotton of different grades and lengths is due to the fact that the rolls in the different machines which have to draw out the cotton into thread travel at different speeds, the back roll traveling slower than the front roll. These rolls are also set a certain distance apart, according to the length of the staple. If the rolls should be set to spin 1-inch cotton and $1\frac{1}{4}$-inch should be used, the rolls would break the fibers, and this would have a bad effect in the making of yarn. On the other hand, if the rolls should be set for $1\frac{1}{4}$-inch and seven-eighths or 1 inch cotton should be used, many fibers would drop between the rolls and in this way there would be much waste and loss. Where the manufacturer makes a wide range of yarns and fabrics, such a mixing of cottons of extreme different lengths is almost unheard of. Therefore, should the manufacturer get different grades in any lot of cotton, the bales would be separated according to grade, and used according to the staple required for a certain yarn or fabric.

LESSON FROM THE FIGURES.

The foregoing brief outline of the methods that obtain in classification and grading of cotton will convey an idea of the intricacies of the system and of the difficulties that confront the ordinary farmer in seeking to obtain a fair and proper price for his product. It has been pertinently said that in the South "cotton is bought, not sold." The expert buyer, familiar with the relative value of grades, decides upon the quality of the cotton offered and the farmer often has no means of ascertaining the correctness of the buyer's judgment.

As may be seen from the foregoing table, which is given to illustrate the different values of the various grades according to the classification and grades established by the New York exchange for the period stated, the difference in a single grade above middling may have a money value of $2.80 per bale, and if the difference should be two grades "on" the money value may be $6.50 per bale.

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FIG. 1.—BALE AS RECEIVED AT THE COMPRESS FROM THE GINNERY AFTER BEING CUT AND SAMPLED.

FIG. 2.—BALE AFTER COMING FROM THE COMPRESS; SAMPLE HOLE COVERED WITH A PATCH AND THE EIGHT HOOPS TRIMMED.

FIG. 3.—CONDITION OF COTTON UNDER DIFFERENT METHODS OF BALING.

FIG. 4.—DAMAGED COTTON REMOVED FROM WAREHOUSE AND EXPOSED TO SUN.

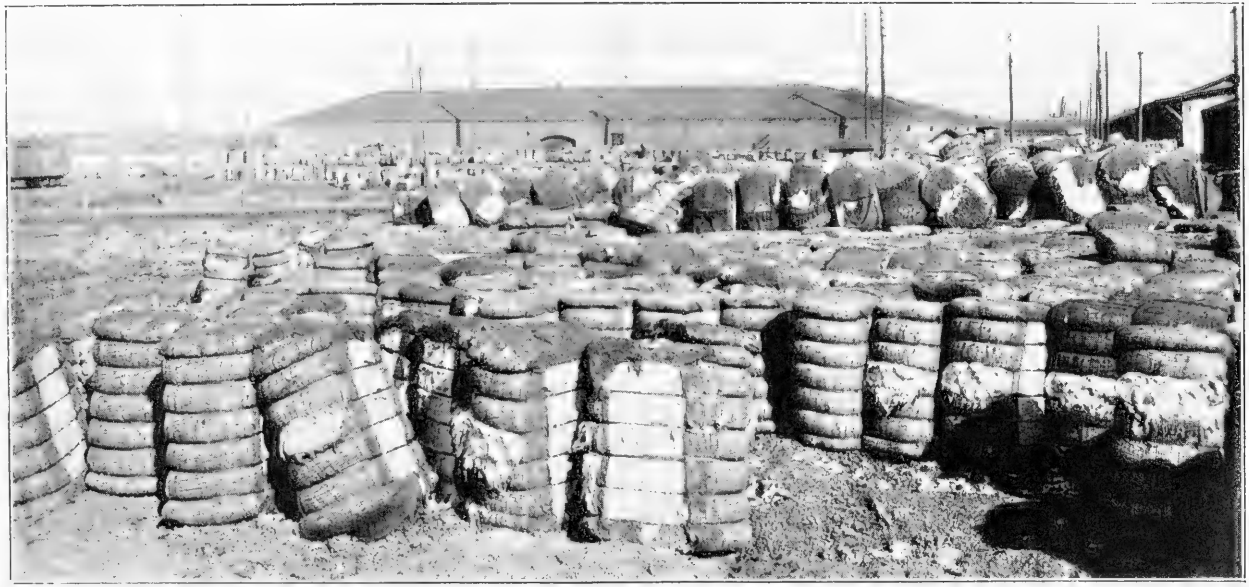

FIG. 5.—COTTON STORED IN OPEN YARDS AT SAVANNAH, GA.

FIG. 6.—COTTON STORED ALONG THE OLD CANAL, SAVANNAH, GA.

FIG. 7.—COTTON STORED IN MUDDY STREETS OF SAVANNAH, GA.

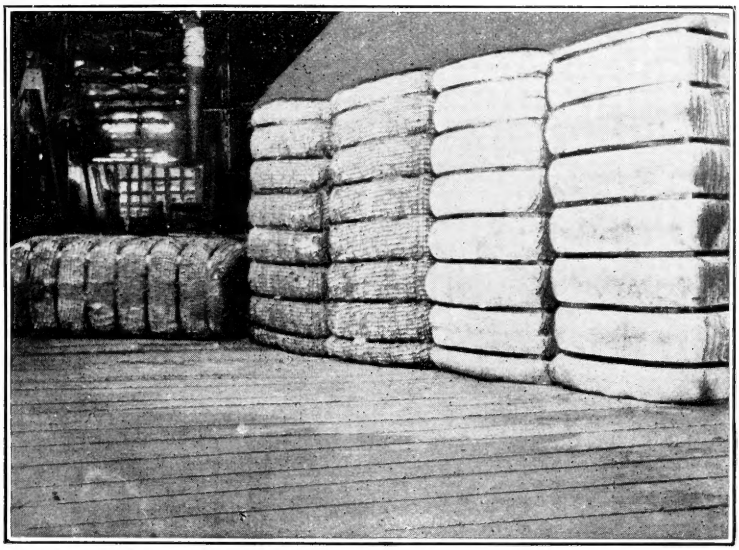

FIG. 8.—GIN-COMPRESSED BALES SHOWING CONTRAST IN QUALITY OF BAGGING.

FIG. 9.—GIN-COMPRESSED BALES COVERED WITH COTTON BAGGING.

FIG. 10.—GIN-BOX, EGYPTIAN, GIN-COMPRESSED, AND RECOMPRESSED COTTON BALES.