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Agricultural Research Institute, Pusa

Cawnpore-American Cotton, II

Further Field Trials (1918-1920), Spinning
Trials and Market Organization

BY

B. C. BURT, M.B.E., B.Sc.,
Secretary, Indian Central Cotton Committee.

(Recently Deputy Director of Agriculture, Central Circle, United Provinces.)



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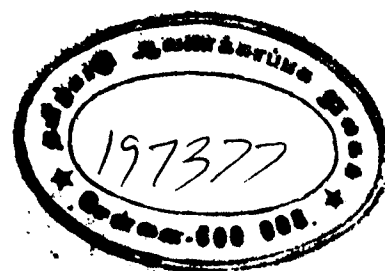
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Cawnpore-American Cotton, II.

Further Field Trials (1918-20), Spinning Trials and Market Organization.

[Received for publication on 10th April 1921.]

Introductory.

IN a previous publication¹ certain definite conclusions were reached as to the prospects of Cawnpore-American cotton in the canal districts of the Central Circle. It was shown that, given irrigation facilities for timely sowing, Cawnpore-American cotton was a profitable crop and that a market could be established. A number of pure lines had been isolated and partly tested and some of these were of undoubtedly desirable quality. The field trials of the different selections have now been completed, actual spinning trials have been conducted and one selection (Ca 9) has been finally chosen for distribution and a definite stage reached in its establishment in the Cawnpore District. The system of special canal supplies has been tried for three years with satisfactory results and, perhaps most important of all, an independent market for Cawnpore-American *kapas* (unginned cotton) has been established in Cawnpore, prices being independent of *desi kapas* prices and governed by Bombay prices for stapled cottons. It has already been shown¹ that Cawnpore-American cotton yields well near Cawnpore, provided that it is sown with irrigation before about June 15th. The special irrigation arrangements already described, involving a lengthening of the rotations in order to provide an enhanced supply on American cotton channels in May and on the alternate channels (for *desi* cotton) in June, have now been under trial for three years with satisfactory results. In 1917 the area of American cotton was approximately 1,500 acres, in 1918, 4,700 ; in 1919, 8,100 ; in 1920, 3,380 ; and in 1921, 8,500.²

The fall of area in 1920 was due to a variety of causes the chief of which was the drop in the price of all cottons accompanied by a reduction in irrigated cotton sowings generally and an anxiety on the part of

¹ *Pusa Bulletin* 88.

² Preliminary return.

cultivators to sow food crops. Contributing causes were a delay of a week in the special canal roster and a temporary set-back due to a change in the marketing system. These difficulties have now been largely overcome, and there is every reason to anticipate a steady development of American cotton growing.

Before passing to the consideration of the pure line selections it is of interest to consider the yield from ordinary American cotton obtained since 1917. The monsoon of 1918 was a failure, all sowings were made with irrigation and but for light rain in August the season was dry. A special effort was made to ascertain the yields obtained by cultivators under these conditions and it was found that few, except those who had neglected to irrigate, had obtained yields of less than 8 maunds (658 lb.) of unginned cotton (*kapas*) per acre whilst many had obtained yields of 15 maunds of *kapas* per acre.

In 1919 a fairly normal season was experienced with a dry September and yields were average, American being fully equal to *desi*.

In 1920 the early part of the monsoon was normal but rain ceased in August. Those cultivators who irrigated their cotton once at the end of the monsoon obtained good yields. Yields of American cotton were not only satisfactory but, particularly in the south of Cawnpore District, were markedly better than *desi* cotton.

Irrigation arrangements.

The difficulties experienced in arranging timely canal supplies for early-sown cotton have been discussed in detail in a previous bulletin¹ as also the measures proposed to ensure adequate irrigation for American cotton sowings. These proposals were considered by the Indian Cotton Committee² which included an experienced Irrigation Officer, and it was recommended that special irrigation facilities of this nature should be continued until the effect on the area of American cotton can be definitely ascertained.

The method of lengthening the rotations so as to give enhanced supplies on American cotton channels in May is the only concession that appears workable on an extended scale. Other concessions, such as temporary outlets, have been practically abandoned. The effect on the area up to 1919 is marked; the reasons for the temporary set-back in 1920 have already been explained. The scheme is being continued for 1921 sowings and there is every reason to anticipate a further marked increase in area.

¹ *Loc cit.*

² *Report of the Indian Cotton Committee, p. 44.*



The method of concentrating the water supply on certain channels in May (for American cotton), and on the alternative channels in June (for *desi* cotton), has not only proved advantageous to American cotton but also to the *desi* cotton area. The quantity of water required for cotton *palewa* is high during these hot dry months and the lengthening of the rotation materially reduces channel losses.

The effect on other crops of this alteration in the canal supply system must also be considered. Cotton is the principal commercial crop in the *kharij* season in the middle and lower *doab*, and sugarcane is nominal¹ in the Cawnpore District and relatively unimportant in the adjoining districts. In the real sugarcane tracts timely irrigation of young cane presents a special canal problem which does not arise in these districts. It is doubtful if the present cane areas in the lower *doab* will be maintained. Other early *kharij* crops are chiefly food grains, such as early rice, *juar* (*Sorghum*) and maize. Here, on the whole, June sowings have a slight advantage over May so that the lengthened rotation is an advantage to the less important cotton areas, which do not receive water for American cotton sowing in May.

Behaviour of different selections in field trials, 1918-1920.

Trials up to and including 1917 pointed to the selections Ca 5, 7, 9 and 11 as good yielders of which Ca 7 and 9 were of superior staple; Ca 18 was of good staple but uncertain in yield, being late in maturing, and was eventually rejected; Ca 11 was rejected after trial in 1918 as although its extremely early habit was of value it was not superior to others in yield in 1918, and in that season (a dry one) the lint was not only short but rough.

¹ *Season and Crop Report, U. P.* Area in acres (fractions of 1,000 omitted)

District	Cotton		Sugarcane	
	1918	1919	1918	1919
Cawnpore . . .	84,000	62,000	7,000	12,000
Etawah . . .	66,000	57,000	9,000	12,000
Malnuri . . .	86,000	56,000	8,000	10,000
Fatehpur . . .	25,000	22,000	5,000	8,000
Farrukhabad . . .	50,000	84,000	12,000	15,000

Irrigated

The yields from Ca 5, Ca 7 and Ca 9 have been as follows :—
1918. Yields in lb. kapas per acre—Kalianpur Farm.

Variety	1st sowing May 14th	2nd sowing May 24th	3rd sowing June 10th	Larger scale sowings May	Ginning percent- age
Ca 9	(a) 602	694	746	1,009(1)	30.2
Ca 7	(b) 494	602	725	674(3)	30.8
Ca 5	587	755	853	835 (4)	33.9
Unselected Cawnpore-American	742	763	...	...	29.5
(1) 2.1 acres	(2) 8.3 acres	(3) 1.9 acres	(4) 1 acre	(5) 3½ acres	(6) 2½ acres
1919. Yields in lb. kapas per acre.					
Variety	Cawnpore farm		Larger scale sowings, Kalianpur		Ginning percentage
Ca 9	(a) 628	(b) 608	A. 750	B. 680 (1)	31.6
Ca 7	548	552	760	...	30.2
Ca 5	...	...	836	...	33.5
(1) 23 acres.					
1920. Yields in lb. kapas per acre.					
Variety	Means (a)	Probable error%	Larger scale sowings, Kalianpur		Ginning percent- age
Ca 9	559 ± 46	8.2	986	755 (2)	30.2
Ca 7	583 ± 37	6.4	562	...	28.9
Ca 5	581 ± 125	21.6	930	...	33.2

(c) Means of 4 plots each on the Chess Board Scatter system. Distances between plants increased from the normal 18" to 2' to permit of accurate and equal spacing.



It will be seen that Ca 9 has maintained a consistent yield. The year 1918 was abnormally dry, the monsoon being almost an entire failure, and in the absence of previous experience to guide us it was obvious that too little irrigation water was applied to obtain the highest yields. The following season, 1919, was a fair average cotton season. In 1920 rain was heavy in July and then abruptly terminated. The sudden drought following on a period of heavy rainfall imposed a severe strain on the plant, and it was necessary to apply irrigation water sparingly as the monsoon had not withdrawn from the rest of India and there was every probability of further heavy rain. The yields, though not so good as the appearance of the crops in August promised, were satisfactory. Approximately 1,150 acres of Ca 9 were grown by cultivators in 1920. Yields were satisfactory and on the average better than those from either *desi* cotton or unselected Cawnpore-American.

Spinning trials and valuations.

The value of a new commodity cannot be considered as established until it has been placed on the open market in bulk and sold under normal trade conditions. This involves a certain minimum production, often not readily attained until the first steps in the introduction of a new crop amongst cultivators have been taken, and a knowledge of market peculiarities, and of the best markets to enter, is necessary if reliable information is to be obtained. In the improvement of staple crops technical information from trade sources is required at an earlier stage. The experimenter's own judgment is of much value on comparative points but cannot be depended on for absolute values since his experience is necessarily much greater within the limited range of material on which he is working than for existing market types. Nor can he be expected fully to appreciate the view of the commercial user of the commodity. In the earliest stages, valuations by expert brokers are of very great assistance as also the opinions which individual manufacturers are able to give. But these may prove misleading. A manufacturer as a rule is unwilling to substitute an unknown cotton for an accustomed type since he knows by experience that his judgment is not invariably right when he estimates the spinning capabilities of a given sample of cotton. He is therefore apt to offer less than what he would judge to be the full value of the sample. An expert broker naturally handles a greater variety of samples than a manufacturer but he also is apt to be conservative in reporting on new samples. Further, it is much easier for a broker to fix the *class* of a new cotton, compared

to known standards, than it is for him to place it as regards *style* where he is less concerned with cleanliness and appearance than with length, strength, fineness and uniformity of staple. It follows therefore that preliminary manufacturing experiments are eminently desirable before the distribution of a new cotton for cultivation is undertaken. Fortunately this presents no great difficulty since a practical spinning test can be carried out on a sample of 100 lb. Such a trial, if run in comparison with a standard cotton, will afford definite information as to such points as refraction, will give definite information as to the difficulties met with in manufacture and of the good and bad points from the spinners' standpoint, and will show that yarn of a definite count with a definite strength can be produced. Given a somewhat larger supply, it is possible to amplify the spinning tests to cover a range of counts, and the repetition of these in several seasons should give a definite record of the capabilities of a given cotton. In reporting on such tests sufficient detail can always be given to make them intelligible to other manufacturers, and such tests discount to a considerable extent the errors likely to arise from valuations of experiment station samples where such points as appearance and cleanliness are apt to be over-emphasized.

Through the courtesy of Mr. Hodgkinson (of the Indian Cotton Committee), the British Cotton Growing Association, the Imperial Mills, Blackburn, and of two Cawnpore Mills we are able to reproduce the results of four spinning trials, two carried out in Cawnpore and two in Lancashire with cotton grown in the years 1918, 1919 and 1920.

Report on 5 bales of Ca 9 and Ca 7 cotton by the Imperial Mills, Blackburn, from the 1918 crop.

"These bales were received by us on April 26th, 1919, and we had same valued immediately by our cotton brokers.

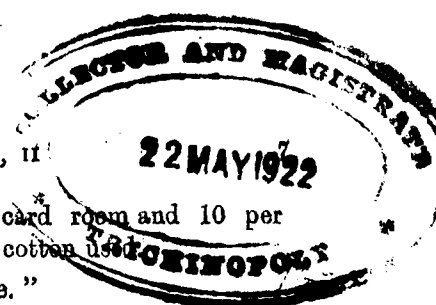
"They estimated their value to be 17.00d. for the Ca 7 and 16.50d. for the Ca 9. We enclose you their letter herewith.

"We may say that we found the cotton to spin fairly well and the strength was not much different from that of good $1\frac{1}{8}$ " Texas.

"The yarn was not quite so clean as that spun from the usual quality of Texas good middling cotton, but altogether we should consider that there ought to be a fair demand for this style of cotton.

"The yarn spun was 28's and 30's ring twist, the latter testing 57, 58 and 62 lb. on three tests.

Blow room loss	.	.	.	.	.	.	.	5½ per cent.
Card "	"	.	.	.	.	.	.	5½ "
TOTAL								11 "



as compared to an average of 4 to 4½ per cent. card room and 10 per cent. total loss for the usual type of American cotton.

"Spun on 1" rollers set as close as possible."

Report of the Elgin Mills, Cawnpore, April 1920, on Ca 9 cotton from the 1919 crop.

Blow Room Refraction.

Invisible loss 2.21 per cent. Total waste 7.275 per cent.

Spinning Results.

Warp count	Test	Weft count	Test
25	56.16	30.3	31.5

"The refraction in the blow room was very high, the invisible loss being exceptional. This may, however, have been due to the cotton being slightly damp when put into the mill. We should prefer to test one or two more lots before saying that this high refraction is a peculiarity of this cotton. The cotton has one serious drawback; it is very neppy; and in our opinion this fault could not be overcome even by much extra care and attention in the carding process. We consider the cotton suitable for spinning warps up to 24's counts and weft up to 30's. As mentioned in our letter of April 6th we valued the cotton at the time we received it, i.e., about March 22nd, at Rs. 540 per candy."

Report by the Imperial Mills, Blackburn, 1920, on Ca 9 cotton from the 1919 crop.

"We received 100 lb. of Indian cotton from Messrs. Buchanan Wignall & Co., and at your request have tested same and the report is as follows:—

"We find that loss up to the carding engine was 13½ per cent. We are sending you samples of the cotton taken from each process and have marked same. We have spun samples of 36's SR made from a 5 Hank roving and a sample of 30's DR spun from a 5 Hank roving double. The 36's average test was 41 lb. The 30's DR average test was 61 lb. per lea.

"With the small amount of cotton as a sample, it was very difficult to get a thorough test. We consider that the cotton is very satisfactory and for counts up to 32's the yarn would compare very favourably with American cotton. We consider it very much better than last season's growth."

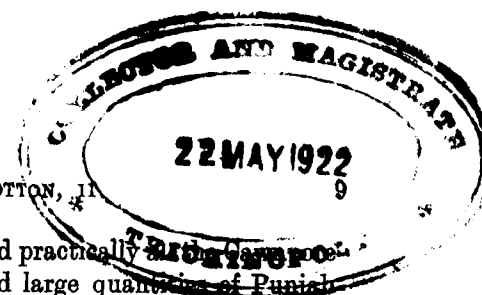
Report by the Cawnpore Cotton Mills, 1921, on Ca 9 cotton (20 bales) from the 1920 crop.

"We have now completed the spinning of the Ca 9 and find the refraction to be 8.53 per cent. which of course is exceptionally good, though not appreciably better than some Punjab-American which we have also tested and which comes to 8.62 per cent. This Ca 9 however spins better, our results at 22½'s being an average test of 50 lb.,* which is exceptionally good for this count, and compares with the Punjab-American, which we spun up to 20's only, testing up to 68 lb. The quality of the yarn is exceptionally good and I anticipate getting at least eight annas per bundle better price than for the same count spun from ordinary Western and Southern cottons.

"As regards your further enquiry I consider that this cotton would make an excellent warp yarn, 20's counts, which is about as fine as can be worked in Cawnpore all year round with good results. For weft it should spin up to 30's and should produce a good yarn though not perhaps in the very hottest weather."

Summarizing these reports it may be said that the selection Ca 9 is a cotton of typical American type with a staple of 1½" to 1¾" which is somewhat above that of average American. It is suitable for spinning in Cawnpore yarns up to 25's warps and 30's wefts and possibly higher counts at favourable seasons. In Lancashire it is suitable for counts up to 36's and it may be remarked that the uniformity of cotton from the 1918 crop was particularly favourably commented upon by the Mill Manager although, doubtless as the result of a very dry season, the staple was slightly shorter than usual. Broadly it may be said that this cotton would always be saleable in Lancashire at fair prices and is a grade which is largely used in Lancashire. It should however be pointed out that it is not of sufficiently *long staple* to be greatly competed for, though good enough of its style. With the ever increasing tendency to finer spinning, Lancashire is most concerned with the supply of cotton of 1½" staple and over and, although it uses large quantities of much shorter cottons, has less anxiety about the adequacy of supplies. Actually India itself, largely Cawnpore, has up to date furnished the most profitable market for both the original Cawnpore-American and the selection Ca 9. The up-country mills are steadily demanding better cottons for existing counts and are steadily spinning higher counts. Statistical information of this change is not yet available as progress has been rapid within the last two years but that this change has taken place is common knowledge and is already reflected in the local markets.

*Twist co-efficient 3.4, yarn required for weft, with more twist a test of 10 lb. higher could have been obtained.



Cawnpore mills are known to have absorbed practically all the Cawnpore-American produced up to the present and large quantities of Punjab-American also.

But the steadying influence of the English market may be of importance to the grower at any time. Cawnpore-American 9 is a cotton slightly above the average American quality and its price should eventually be dominated by that of similar grades of American in Liverpool. The grower of this variety will no longer be exposed to the vagaries of the Indian *desi* cotton market since he will no longer be growing a quality below that controlling the world's prices. This naturally brings us to the question of market organization but before leaving this subject a word of warning is necessary. If acclimatized American cottons are ever to find a large market in Lancashire they must be marketed in a cleaner condition than has been hitherto insisted on for Indian cottons. This, however, is a matter concerning the ginner more than the cultivator.

Market organization.

The growing of an American type of cotton involves a modification of the cultivators' ordinary practice, and in order to achieve success it is necessary to assure him not only of a market for his *kapas* but also a market which will give him a reasonable premium for the improved commodity he produces. As has already been explained (*loc. cit.*), cotton is invariably sold in the form of *kapas* (unginned cotton) and whilst there is always a market in Cawnpore for good cotton of any grade, once it has been ginned and baled, there was at first no open market for Cawnpore-American *kapas* except at the same price as *desi kapas*.

In 1917 and 1918 the Agricultural Department, with the sanction of Government, purchased all the American *kapas* offered, arranged for ginning and baling and placed the cotton on the open market. In 1918 it was obvious that the area had reached a stage where these operations were not unattended by risk of loss, though thanks to valuable information furnished by members of the trade no loss occurred. Further, private purchase of American *kapas* had started in a small way during 1918. It was decided therefore in 1919 to take steps towards placing the marketing of American cotton on a commercial basis, as in 1918 the Agricultural Department had placed over 1,000 bales on the open market and its value was established. Arrangements were therefore made with a Cawnpore firm of purchasing ginner, who were working four ginning factories at different places in the tract in which this cotton is grown, to guarantee a minimum premium to cultivators of Rs. 2 per maund above *desi* and to buy at prices governed by the Bombay market

quotations of the day. They also opened one out-agency for buying *kapas* in one of the densest areas. As a result cultivators obtained in all cases more than they would have obtained under the previous system of departmental purchase and more than the guaranteed minimum, provided that they kept their *kapas* pure. The department organized the sale of *kapas* in a few out-lying areas on behalf of the firm but in most cases village dealers took the matter up, and those cultivators who were not able to bring their cotton to the larger markets disposed of it without difficulty. The Agricultural Department was given the right to see the firms' accounts to verify the prices paid and also retained a call on all seed, being allowed to supervise the separate ginning of *kapas* from which seed for sowing the next year was required.

The immediate effect of this arrangement was to bring other buyers of *kapas* into the market. In 1920 the same firm again guaranteed to buy all the American *kapas* tendered at prices based on Bombay but it was found early in the season that no special arrangements were necessary. Regular quotations were obtainable in the Cawnpore cotton market for Cawnpore-American *kapas* and were independent of the prices of *desi* and governed by Bombay prices for staple cotton. Personal enquiry showed that Cawnpore rates for American cotton were well-known in subsidiary markets and in many villages; Agricultural Assistants were given information as to the prices ruling for distribution.

This final stage was much assisted by the marked premiums ruling for stapled cotton. In February the crop of Ca 9 grown on the Kalianpur Seed Farm was sold at Rs. 425 per *candy* of 784 lb. to a Cawnpore mill (equivalent to Rs. 450 Bombay) with *Broach* cotton quoted at Rs. 311 per *candy* and the best Punjab-American at Rs. 380 in Bombay. Cotton from the same selection grown by cultivators (271 bales) sold earlier in the season at Rs. 450 per *candy* and converted to the same basis as the above would have fetched Rs. 385 per *candy*.

The cultivator however is more concerned with the price per *maund* obtained for his *kapas*. At the beginning of the season *desi* cotton was quoted* at 3 seers 6 chataks per rupee in the Cawnpore market and American at 2 seers 6 chataks and Ca 9 at 2 seers 4 chataks. Towards the close of the season margins had widened and *desi kapas* was sold at 4½ seers per rupee and American at 2½ seers. Expressed in rupees per standard *maund* of 82.3 lb. these prices are as follows:—

<i>Desi kapas</i>		<i>American kapas</i>	
Beginning of season	Close of season	Beginning of season	Close of season
Rs. A.	Rs. A.	Rs. A.	Rs. A.
9 8	7 2	13 8	13 0

*Based on the local *kapas maund* of 50 standard seers = 10½ lb.



Not only are the gross premiums paid higher than in previous years but viewed as a percentage are even more satisfactory. The stability of the price of Cawnpore-American cotton during a falling market is also of no little importance.

Our object had therefore been achieved and the department was able to concentrate attention on the seed supply problem.

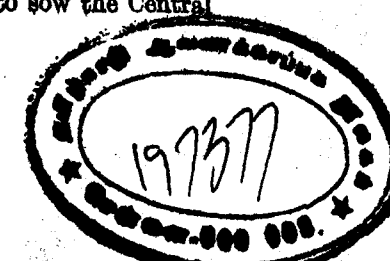
Seed multiplication and the maintenance of purity.

The check in expansion of Cawnpore-American cotton in 1920 was from one point of view a decided advantage. As early as 1918 it was tolerably obvious that Ca 9 was the best of the pure line selections and, pending the completion of field tests, the multiplication of a stock of pure seed was taken up. This enabled the whole of the available area on the Kalianpur farm to be sown with this selection in 1919 and for demonstrations of the superiority of this selection to be carried out in the fields of selected cultivators, in addition to providing a reasonable quantity of cotton for the spinning trials carried out in 1919 and 1920. For sowings in 1920 seed for some 1,200 acres was available for distribution. The bulk of this was reserved for an area in the neighbourhood of Cawnpore where American cotton growing is well established and where a reasonable estimate of maximum seed requirements per village could be framed. In the villages selected no other American cotton seed was supplied and no other was grown; as a matter of fact, these villages only grew a negligible amount of *desi* cotton. By arrangement with a Cawnpore firm of ginners a special buying depôt for Ca 9 *kapas* was opened locally and separate ginning under supervision was arranged to avoid any mixing of the seed. In this way seed enough for some 20,000 acres is available for 1921 sowings, and the complete replacement of the selected Cawnpore-American previously grown is possible.

For some years to come seed control is essential to the maintenance of Cawnpore-American cotton as an unmixed crop. Fortunately the amount of seed required for an acre of cotton is small and the price nominal compared to crops such as wheat. It is therefore possible to carry departmental seed distribution and control to an extent impossible in the case of many crops. The seed multiplication factor for cotton being approximately 40, it is now possible on the Kalianpur Seed Farm to grow enough seed of any one variety to supply 2,000 acres of cultivators' cotton in the ensuing year and this, allowing for wastage, could in turn provide for 40,000 acres in the second year.

Given therefore a circle of selected growers in a convenient locality, the maintenance of purity is feasible since the seed to sow the Central

5: from 2, 1921
1921-1926



Seed Farm area can be produced on one to two acres one year previously and the quantity required for this can be grown under nets with ease. Thus in four years seed for a minimum of 40,000 acres can be worked up from protected plants. From 1921 this scheme will work automatically, the protecting of seed plots by nets being continued until found unnecessary.

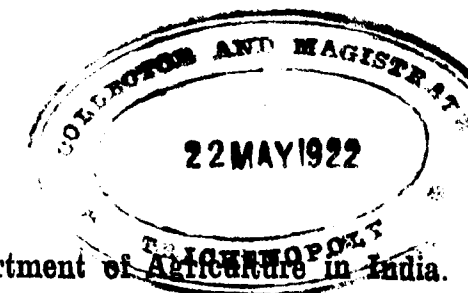
It is not possible to prophecy as to how many years such seed control may be necessary. As the area grows risks of accidental admixture becomes less but the chance of fraudulent mixing always remains, particularly when the prices of staple cotton are relatively high.

Conclusion.

By pure line selection with the necessary precautions against cross-fertilization a pure race has been isolated from the mixed acclimatized exotic known as Cawnpore-American cotton. This yields well, has a staple of $1\frac{1}{8}$ " to $1\frac{1}{2}$ " and is suitable for spinning 25's warps and 30's wefts in Cawnpore and up to 36's in Lancashire. Over 1,100 acres of this selection were grown by cultivators in 1920 and sufficient seed is now available to replace the original Cawnpore-American entirely. An independent market for unginned American cotton (*kapas*) has been established in Cawnpore.

APPENDIX Monsoon Rainfall, 1911-20 (Cawnpore), in inches.

Month	1920	1919	1918	1917	1916	1915	1914	1913	1912	1911	Average
May											
1st to 8th	...	0-10	0-28	0-51	...	0-03	1-08	...	...	...	0-20
9th to 15th	...	0-66	...	0-08	0-08	...	0-64	0-46	...	...	0-19
16th to 23rd	...	...	...	0-02	...	...	...	1-00	...	...	0-11
24th to 31st	0-37	...	...	...	0-02	...	0-50	0-23	...	...	0-11
June											
1st to 8th	...	...	0-65	0-37	0-18	...	0-33	...	...	0-03	0-16
9th to 15th	...	0-13	0-17	0-61	5-58	0-01	0-07	1-54	3-64	0-04	1-18
16th to 23rd	...	...	...	1-50	5-70	0-08	...	...	...	...	0-73
24th to 30th	1-60	...	0-91	0-86	1-32	3-77	...	4-62	...	...	1-31
July											
1st to 8th	0-70	4-03	0-81	1-22	1-16	3-09	4-27	0-84	0-81	...	1-69
9th to 15th	0-80	2-11	0-22	1-33	3-98	0-48	1-83	1-61	4-84	3-59	2-08
16th to 23rd	3-89	1-24	0-19	3-42	4-58	0-02	1-80	1-00	3-97	0-04	2-03
24th to 31st	8-01	2-24	0-24	4-68	4-62	5-82	2-03	0-21	0-58	...	2-84
August											
1st to 8th	2-39	4-29	0-01	3-30	0-79	4-46	2-39	4-51	1-22	1-15	2-45
9th to 15th	0-10	4-33	...	1-30	3-78	...	1-24	...	3-41	0-41	1-49
16th to 23rd	0-01	2-60	3-13	1-65	2-84	2-83	2-30	0-49	2-63	2-04	2-66
24th to 31st	0-01	0-95	2-17	0-31	1-57	15-10	...	1-13	2-93	0-76	2-60
September											
1st to 8th	0-08	4-98	1-28	2-00	0-91	9-77	...	5-42	1-55	3-78	3-99
9th to 15th	0-03	0-31	...	1-48	0-45	2-28	3-55	0-07	...	6-34	2-46
16th to 23rd	0-03	0-42	...	5-89	3-02	8-24	3-79	0-12	...	0-62	2-60
24th to 30th	...	...	...	1-16	0-30	0-07	...	...	2-54	2-35	2-60
October											
1st to 8th	...	0-89	...	0-02	1-93	1-63	...	...	...	1-16	1-50
9th to 15th	...	...	...	...	...	0-02	...	...	...	0-20	0-01
16th to 23rd	...	...	...	...	...	...	...	...	...	...	...
24th to 31st	...	...	...	2-21	...	...	...	...	...	0-01	...
TOTAL	18-12	29-28	10-08	33-93	42-81	57-90	25-82	23-25	28-12	22-52	29-11



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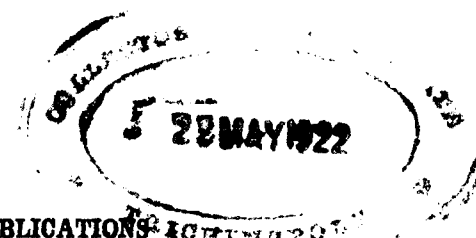
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