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**INDIAN CENTRAL COTTON COMMITTEE  
TECHNOLOGICAL LABORATORY.**

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**COTTON RESEARCH IN INDIA**

BEING

**AN ACCOUNT OF THE WORK DONE AT THE  
INDIAN CENTRAL COTTON COMMITTEE  
TECHNOLOGICAL LABORATORY,  
1924-1935.**

By

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Technological Laboratory, Matunga, Bombay.*

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WITH A FOREWORD

By

**Diwan Bahadur Sir T. VIJAYARAGHAVACHARYA, K.B.E.**

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## FOREWORD.

**I**NDIA is the second largest cotton growing country in the world. Out of a total *cultivated* area of about 300 million acres, no less than 25 million acres, or some 8 per cent. are sown under cotton, yielding a crop of about 6 million bales. Approximately half of it is consumed in India's 365 mills which employ 4,15,000 hands, the remainder is exported to foreign countries. Thus, whether we look to the agricultural, the trade or the industrial side, a large number of people in India earn their livelihood by work on cotton and their welfare depends entirely upon the condition of the crop and the prosperity of the cotton trade and industry. Cotton is easily the foremost organised industry in India.

Cotton is one of those crops which needs continual attention. Left to itself it deteriorates in quality owing to the mixing of seeds in the fields and the ginneries which gives rise to undesirable hybrids. Moreover, it is not only highly susceptible to climate and environment but also falls an easy prey to a host of pests and diseases. The cotton breeders have to be, therefore, untiring in their efforts to evolve improved varieties, which, in a given area, could resist the onslaught of pests and diseases, give a higher yield and ginning out-turn or should mark an improvement in staple over the already established cotton. But the work of the cotton breeder is restricted to the fields; he has no means of assuring himself that the variety evolved by him will ultimately prove acceptable to the spinner. There is thus a very clear need for an institution where the fibre-properties and the spinning performance of cottons can be accurately determined. An institution of this type forms an indispensable link in the chain of cotton cultivation and consumption.

The Indian Central Cotton Committee was one of the first bodies to recognise the need of having a technological laboratory of its own where tests could be made on improved varieties and research could be undertaken on cotton. The Technological Laboratory has now worked in collaboration with the Provincial Agricultural Departments for over 10 years. It has, besides, carried out a number of investigations on problems which are of direct importance to the cotton breeder, the merchant or the millowner. These investigations cover a wide range of subjects as will be seen from a perusal of this brochure and in this respect alone the Laboratory will bear comparison with any other similar institution. The results obtained at the Laboratory have been described in numerous bulletins, leaflets and circulars, but it was felt by the Committee that if a compact and connected account of the activities of the Laboratory since its inception were written up, it would give the public, both the scientific workers and the laymen, an idea of the nature of work which is being done here and the type of problems which have been investigated in the past 10 years.

I take pride to myself that Dr. Nazir Ahmad was one of my "discoveries." Very soon after I became President of the Indian Central Cotton Committee under an amendment of the Indian Cotton Cess Act made in 1929, it was brought

to my notice that the newly created appointment of Assistant Director though advertised in the Indian Press could not be filled as no suitable applicants were forthcoming in India. I suggested that I should be allowed to write round a personal letter to the Indian Universities and as a result there was a useful letter from Dr. Meghnath Saha suggesting some names, Dr. Nazir Ahmad's being one of them. The Selection Committee appointed for the purpose chose him as the most suitable of the candidates who were interviewed. He took over his duties at Matunga in March 1930. Quite unexpectedly our first Director, Dr. Turner, had to leave us in December of the same year to take up an appointment in Manchester and the Committee appointed Dr. Nazir Ahmad to succeed him. In view of the shortness of time he had been in Matunga this was somewhat in the nature of an experiment, but the remarks of successive Technological Research Sub-Committees show what an unqualified success it has been.

There is no finality in scientific research and any "live" institution is bound to grow and expand. Under Dr. Nazir Ahmad, as under Dr. Turner, the Technological Laboratory at Matunga has progressed in new directions and is being called upon to deal with a variety of new problems.

I trust that this brochure will interest the public in the work carried on so unobtrusively in Matunga.

T. VIJAYARAGHAVACHARYA.

SIMLA, 28th September 1935.

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## PREFACE.

**T**HE cultivation of cotton and its use for the manufacture of textiles goes back to pre-historic times in India. This fact has been established beyond doubt by the recent excavations at Mohenjo-Daro, when certain household articles were unearthed, which had remained buried underground for the last 5,000 years. These were wrapped in tiny fragments a material which, on careful examination under the microscope, was found to be made from cotton. From those ancient times the cotton industry in India developed slowly but steadily, until in the middle ages the fame of her fabrics, which were then unrivalled in fineness of texture or beauty of design, spread far and wide. These halcyon days were followed by a period of decay, when the hand spinning and hand loom industries declined owing to the rapid development of power machinery in the West and the quality of cotton suffered deterioration owing to the lack of scientific control.

With the organisation of the agricultural departments, however, a new leaf was turned, and steps were taken to improve the quality of the cotton crop. During the past fifteen years these efforts have been co-ordinated under the aegis of the Indian Central Cotton Committee, which has financed numerous schemes for this purpose. In this work the Technological Laboratory of the Indian Central Cotton Committee has played an integral and important part by making the requisite tests on the new strains and improved varieties evolved by the cotton breeders and undertaking investigations on the fibre-properties and the spinning qualities of Indian cottons. It is now nearly twelve years since the Laboratory began to function, and it was felt that the time was ripe for taking a stock of the work done in the past. Most of the investigations carried out at the Laboratory have already been described in Technological Bulletins, but it was thought that a connected account in one volume would enable those sections of the public, who are interested in the production, marketing or consumption of cotton, to form a correct perspective of the ground that has already been covered, and to elicit valuable suggestions for lines of development in the future. It need hardly be said that such suggestions would receive the most careful consideration of the Indian Central Cotton Committee.

The success of an institution depends to a very great extent upon those who are at the helm of its affairs and upon those who are selected to conduct its work. The Technological Laboratory has been fortunate in both respects. The principal office-bearers of the Committee have been distinguished men with wide knowledge of administrative and public affairs and their direction of the Laboratory's work has been to its great and lasting advantage. Space does not permit me to recount the names of all, but special mention must be made of Diwan Bahadur Sir T. Vijayaraghavacharya, K.B.E., and Sir Purshotamdas Thakurdas, Kt., who were respectively President and Vice-President of the Committee when this brochure was under preparation, and who by their sympathetic interest made it possible for the Laboratory to expand in a

steady manner. Mr. B. C. Burt, C.I.E., who has now taken over from Sir T. Vijayaraghavacharya, has been associated with the Laboratory from its inception and the Laboratory owes him a deep debt of gratitude for his valuable help and fruitful suggestions. As regards the staff, the Laboratory was fortunate in having as its first Director, Dr. A. J. Turner who not only laid the foundations of its work truly and well, but established its reputation among the cotton research centres of the world. All the work described in Technological Bulletins upto No. 17 (Series A), No. 13 (Series B) and Technological Circulars upto No. 36 was done under his guidance. As the work of the Laboratory grew, the contribution of the Spinning Section became increasingly important, and I must take this opportunity to acknowledge the untiring zeal and the valuable assistance of the present Spinning Master, Mr. R. P. Richardson. The duties of the other sections of the Laboratory have also steadily increased in a corresponding measure and I have pleasure in appreciating the work of Mr. Hari Rao Navkal, who has all along been in charge of the Fibre Testing Section, and Mr. V. Venkataraman who was until recently in charge of the Yarn Testing Section. On the research side Messrs. D. L. Sen, R. S. Koshal, A. N. Gulati and C. Nanjundayya have made valuable contributions. Limitations of space do not permit me to mention by name the testing and clerical staff of the Laboratory, who have performed their arduous duties in a spirit of loyal co-operation. Apart from its own staff, the Laboratory has been favoured with assistance and useful suggestions from public bodies like the East India Cotton Association, Bombay, the Millowners' Associations of Bombay and Ahmedabad, etc. In this connection I must offer my special thanks to Major W. Ellis Jones who for many years very kindly undertook to value the samples of cotton sent to the Laboratory for tests.

*December, 1935.*

N. A.

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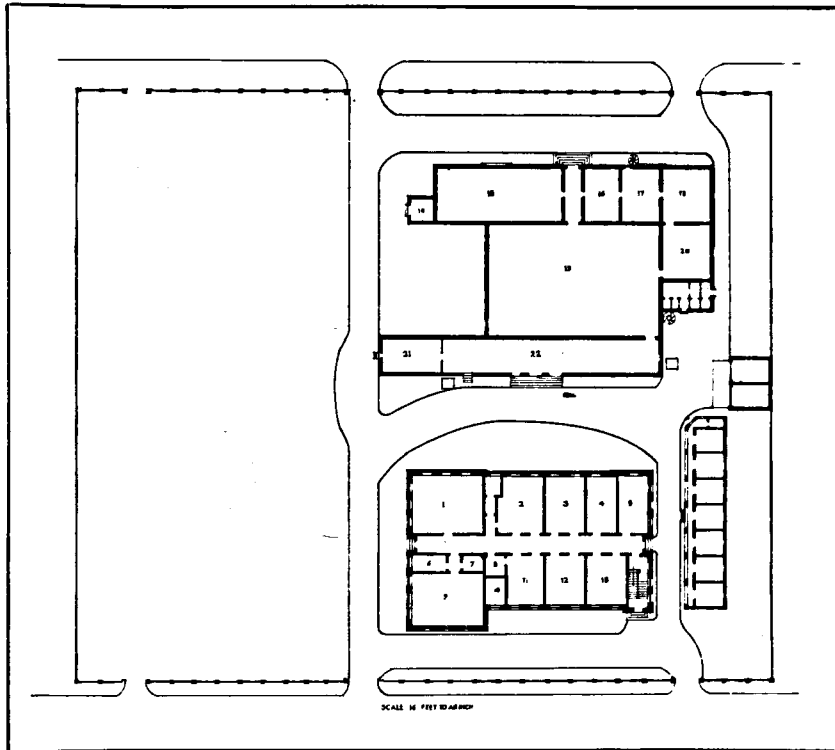
# CONTENTS.

	PAGE.
I. History and Objects of the Indian Central Cotton Committee Technological Laboratory .. .. .	1
II. Fibre Tests and Research on Cotton Fibre and Yarn .. .. .	6
1. The Importance and Value of Fibre Tests .. .. .	6
2. Routine Tests .. .. .	7
(a) Agricultural samples .. .. .	7
(b) Trade samples .. .. .	8
3. Cotton Fibre and Yarn Research .. .. .	9
(1) Sampling .. .. .	9
(2) Method : .. .. .	12
(i) Fibre properties .. .. .	12
(ii) Yarn characteristics .. .. .	13
(a) Yarn strength .. .. .	13
(b) Twist in yarns .. .. .	15
(3) Other Investigations .. .. .	17
(4) Measurement of fibre properties :—	
Fibre properties in relation to agricultural characters :—	
(i) Ginning Percentage and lint index .. .. .	18
(ii) Fibre-weight per inch .. .. .	19
(iii) Variation of fibre-properties on the surface of a seed .. .. .	20
(5) Measurement of yarn characteristics .. .. .	22
(i) Yarn diameter and the influence of twist on diameter and strength of yarn .. .. .	23
(ii) Relation between Lea Test and Single Thread Test .. .. .	24
(6) Relationship between fibre-properties and yarn characteristics:—	
(i) Fibre-strength and yarn-strength .. .. .	26
(ii) Clinging power and spinning quality .. .. .	27
(iii) Fibre-length irregularity and spinning quality .. .. .	28
(iv) Fibre-maturity and yarn neppiness .. .. .	29
(v) Wax content and feel .. .. .	31
(vi) Prediction of the spinning value of a cotton from its fibre-properties .. .. .	32
(7) Other Investigations :—	
(i) Variation of fibre-strength with humidity .. .. .	36
(ii) Variation in hair-weight per inch along the length of a fibre .. .. .	36
(iii) Variation of fibre-strength with the length of the fibre .. .. .	37
(iv) Chemical analysis of Standard Indian Cottons .. .. .	37
(8) Miscellaneous :—	
(i) Antiquity of Indian cottons .. .. .	39
(ii) Selection of warp specimens in cloth sampling .. .. .	40
(iii) Review of work done upto 1927 .. .. .	40
(iv) Manurial Experiments .. .. .	41
(v) Field Experiments .. .. .	41



	PAGE.
III. Spinning Tests and Technological Research :—	
1. Routine Tests .. .. .	43
(1) Agricultural samples .. .. .	43
(a) New varieties .. .. .	44
(b) Field Experiments .. .. .	45
(2) Representative trade varieties .. .. .	48
(3) Leaflets .. .. .	51
(4) Mill samples .. .. .	51
2. Technological Research :—	
(1) Technique of spinning and fibre tests .. .. .	53
(2) Physical conditions inside the Laboratory .. .. .	54
(3) Physical conditions outside the Laboratory .. .. .	54
(i) Storage of kapas prior to ginning .. .. .	55
(ii) The effect of using different types of ginning machinery on the fibre properties and spinning quality of a cotton .. .. .	55
(iii) The effect of artificial humidification before pressing the bale on the quality of cotton .. .. .	56
(iv) The deterioration of Broach cotton with time .. .. .	56
(v) Comparison of the effect of storage in the open and in a shed at Karachi .. .. .	56
(4) Processing of cotton and tests on Indian cottons :—	
(i) Blow-room treatment .. .. .	57
(ii) Spindle speeds .. .. .	57
(iii) Balanced and unbalanced drafts .. .. .	58
(iv) Passage in the drawing frame .. .. .	59
(v) Ordinary and high draft systems of spinning .. .. .	60
(vi) Effect of twist .. .. .	62
(vii) Effect of combing .. .. .	63
(viii) Effect of using balanced and unbalanced drafts on mixings prepared from Indian cottons .. .. .	65
(ix) The effect of employing different roller settings in the fly frames .. .. .	66
(x) Further work on the application of high draft systems of spinning to Indian cottons .. .. .	66
(xi) The effect of employing different twists in the ring frames .. .. .	66
(xii) Standard cottons and other varieties .. .. .	67
(xiii) Punjab cottons .. .. .	68
(xiv) Banilla cotton .. .. .	69
(xv) Mixings .. .. .	69
IV. Exhibits .. .. .	71
V. Moisture content of Indian Cottons and Allied Problems .. .. .	72
VI. Summary .. .. .	77
VII. List of Publications .. .. .	90

## PLAN OF THE TECHNOLOGICAL LABORATORY.



### RESEARCH LABORATORY.

- |                        |                          |
|------------------------|--------------------------|
| 1. Physics Laboratory. | 7. Dark Room.            |
| 2. Director's Room.    | 8. Record Room.          |
| 3. Library.            | 9. Chemistry Laboratory. |
| 4. Research Room.      | 10. Combustion Room.     |
| 5. Workshop.           | 11. General Office.      |
| 6. Balance Room.       | 12. Microscopy Room.     |
|                        | 13. Colloids Room.       |

### SPINNING LABORATORY.

- |                        |                          |
|------------------------|--------------------------|
| 14. Boiler House.      | 18. Spare Room.          |
| 15. Yarn Testing Room. | 19. Spinning Room.       |
| 16. Office.            | 20. Gin Room.            |
| 17. Store Room.        | 21. Cotton Samples Room. |
|                        | 22. Blow Room.           |

## VII. LIST OF PUBLICATIONS.

### TECHNOLOGICAL BULLETINS, SERIES A.

Series A No.	Title.	Date of Publication.	Price.
			Rs. a. p.
1	Explanatory Note on the Conduct of Spinning Tests in the Technological Laboratory, and Standard Cotton Tests Reports.	April 1925 ..	0 4 0
2	Results of Spinning Tests on Standard Indian Cottons.	May 1926 ..	2 0 0
3	Technological Reports on Standard Indian Cottons, 1923-26.	May 1927 ..	2 0 0
4	The Effect of Temperature and Humidity on Cotton Spinning with particular reference to Conditions in Bombay.	August 1927.	2 0 0
5	The Effect of Subjecting Cotton to Repeated Blow-room Treatment.	September 1927.	1 0 0
6	Technological Reports on Standard Indian Cottons, 1927.	November 1927.	2 0 0
7	The Effect of different Spindle Speeds on the Results of Spinning Tests.	May 1928 ..	1 0 0
8	The Effect of Using Unbalanced instead of Balanced Drafts in the Spinning Preparation for Spinning Tests	June 1928 ..	1 0 0
9	Technological Reports on Standard Indian Cottons, 1928.	June 1928 ..	2 0 0
10	Further Tests on the Effect of Temperature and Humidity on Cotton Spinning.	March 1929.	1 0 0.
11	The Effect of Using either One Head or Two Heads of Drawing instead of Three Heads of Drawing in the Spinning Preparation for Spinning Tests.	April 1929	1 0 0
12	Technological Reports on Standard Indian Cottons, 1929.	May 1929 ..	2 0 0
13	Technological Reports on Samples of Punjab-American and Mollisoni (desi) Cottons grown in different parts of the Punjab in the season 1928-29.	May 1929 ..	0 6 0
14	Technological Reports on Standard Indian Cottons, 1930.	June 1930 ..	2 0 0
15	Preliminary Spinning Tests on Mixings of American and Indian Cottons using Ordinary and High Drafts.	June 1930 ..	1 0 0
16	Technological Report on Banilla Cotton	.. .. June 1930 ..	0 6 0
17	Limit Spinning Tests on Cambodia and Mollisoni Cottons.	November 1930.	1 0 0
18	Technological Report on Standard Indian Cottons, 1931.	July 1931 ..	2 0 0
19	Application of Different systems of High Draft Spinning to Mixings of Indian Cottons.	March 1932.	1 8 0
20	Spinning Tests on mixings of Long Staple and Short Staple Indian Cottons.	April 1932 ..	1 0 0
21	Technological Reports on Standard Indian Cottons, 1932.	July 1932 ..	2 0 0
22	Technological Report on Banilla Cotton	.. .. October 1932.	0 8 0

TECHNOLOGICAL BULLETINS, SERIES A—*contd.*

Series A No.	Title.	Date of Publication.	Price
			Rs. a. p.
23	Variation in the Moisture Content of Baled Indian Cotton with Atmospheric Humidity.	June 1933 ..	1 0 0
24	Technological Reports on Standard Indian Cottons, 1933.	July 1933 ..	1 8 0
25	Testing of Indian Cottons for Quality at the Technological Laboratory.	September 1933.	0 8 0
26	Technological Reports on Standard Indian Cottons, 1934.	September 1933.	1 8 0
27	Combing of Good Quality Indian Cottons .. ..	March 1935..	1 0 0

## TECHNOLOGICAL BULLETINS, SERIES B.

Series B No.	Title.	Date of Publication.	Price.
			Rs. a. p.
1	The Foundations of Yarn Strength and Yarn Extension:— Part I—The General Problem .. .. . Part II—The Relation of Yarn Strength to Fibre-Strength.	March 1928..	1 0 0
2	Research in Cotton Technology in India, 1927 ..	April 1928 ..	1 0 0
3	A Note on the Early History of Cotton .. ..	October 1928.	0 8 0
4	Ginning Percentage and Lint Index of Cotton in Relation to the Number of Cotton Fibres per Seed; the Effect of Environment on Ginning Percentage; and the Determination of Unit Fibre-Weight.	Feb. 1929 ..	1 0 0
5	A Comparison of some Methods of Testing the Breaking Strength of Single Cotton Fibres.	January 1930	0 8 0
6	Studies in Sampling of Cotton for the Determination of Fibre Properties:— Part I—Introductory and Experimental .. .. . Part II—Frequency Curves for Various Fibre Properties.	April 1930 ..	1 0 0
7	The Weight per inch of Fibres of Different Lengths, and the Numbers of Fibres of Different Lengths per Seed, for each of the Standard Indian Cottons.	May 1930 ..	0 8 0
8	The Foundations of Yarn-Strength and Yarn-Extension: Part III—The Clinging Power of Cotton.	July 1930 ..	0 8 0
9	The Foundations of Yarn-Strength and Yarn-Extension: Part IV—The Influence of Yarn-Twist on the Diameters of Cotton Yarns and on the Proportions of Fibre-Slippage and Fibre-Fracture in Yarn-Breakage.	August 1930.	0 8 0

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10	Studies in the Sampling of Cotton for the Determination of Fibre Properties: Part III—The Size and Reliability of a Satisfactory Sample.	Sept. 1930 ..	1 0 0
11	Random and Systematic Selections of Warp-Specimens in Cloth Sampling.	October 1930.	0 8 0
12	A Study of Comparative Results for Lea, Single Thread, and Ballistic Tests on Yarns from Standard Indian Cottons.	Nov. 1930 ..	0 8 0
13	The Determination and Variation of Twist in Ring-spun Cotton Yarns.	Nov. 1930 ..	0 8 0
14	Variations in the Properties of the Cotton Fibre in relation to its position on the surface of the seed.	May 1932 ..	1 0 0
15	Examination of a Proposed Relationship between the Lea Test and the Single Thread Test Results.	October 1932.	0 8 0
16	Fibre Length Irregularity in Cotton .. .. .	May 1933 ..	0 8 0
17	Foundations of Yarn-Strength and Yarn-Extension: Part V—Prediction of the spinning value of a cotton from its fibre properties.	June 1933 ..	1 0 0
18	A Note on the Wax Content of Indian Cottons with special reference to their feel.	Dec. 1933 ..	0 8 0
19	Effect of Storage Prior to Ginning on the spinning quality of cotton.	Jan. 1935 ..	0 8 0

## TECHNOLOGICAL CIRCULARS.

Circular No.	Title.	Date of Publication.	Price.
			Rs. a. p.
1	Comparative Spinning Tests on Machine-ginned and Saw-ginned Punjab-American Type 289F.	April 1926 ..	0 4 0
2	Technological Report on Umri-Bani, 1927-28 .. ..	Dec. 1927 ..	0 4 0
3	Technological Report on Punjab-American 4F, 1927-28.	Jan. 1928 ..	0 4 0
4	Technological Report on Punjab-American 289F, 1927-28.	Jan. 1928 ..	0 4 0
5	Technological Report on Verum 262, 1927-28 (out of print).	Jan. 1928 ..	0 4 0
6	Technological Report on Surat 1027 A. L. F., 1927-28 ..	April 1928 ..	0 4 0
7	Technological Report on Gadag 1, 1927-28 .. ..	April 1928 ..	0 4 0
8	Technological Report on Dharwar 1, 1927-28 .. ..	April 1928 ..	0 4 0
9	Technological Report on Cambodia Co.1 (295) 1927-28.	April 1928 ..	0 4 0
10	Technological Report on Hagari 25, 1927-28 .. ..	May 1928 ..	0 4 0

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12	Technological Report on Verum 262, 1928-29 ..	Nov. 1928 ..	0 4 0
13	Technological Report on Punjab-American 4F, 1928-29	Dec. 1928 ..	0 4 0
14	Technological Report on Punjab-American 289F, 1928-29.	Dec. 1928 ..	0 4 0
15	Technological Report on Umri-Bani, 1928-29 ..	Dec. 1928 ..	0 4 0
16	Technological Report on Surat 1027 A. L. F., 1928-29 ..	March 1929 ..	0 4 0
17	Technological Report on Cambodia Co. 1 (295), 1928-29.	April 1929 ..	0 4 0
18	Technological Report on Dharwar 1, 1928-29 ..	April 1929 ..	0 4 0
19	Technological Report on Verum 262, 1929-30 ..	Jan. 1930 ..	0 4 0
20	Technological Report on Umri-Bani, 1929-30 ..	Jan. 1930 ..	0 4 0
21	Technological Report on Punjab-American 4F, 1929-30.	Feb. 1930 ..	0 4 0
22	Technological Report on Punjab-American 289F, 1929-30.	Feb. 1930 ..	0 4 0
23	Spinning Test Report (No. 111) on samples of Fine and Superfine Khandesh Cottons, 1929-30.	Feb. 1930 ..	0 4 0
24	Spinning Test Report (No. 112) on samples of Fine and Superfine C. P. No. 1 Cottons, 1929-30.	Feb. 1930 ..	0 4 0
25	Spinning Test Report (No. 113) on samples of Fine and Superfine Berar Cottons, 1929-30.	Feb. 1930 ..	0 4 0
26	Spinning Test Report (No. 114) on samples of Fully Good and Fine Muttia Cottons, 1929-30.	Feb. 1930 ..	0 4 0
27	Spinning Test Report (No. 115) on samples of Latur, Nanded and Punjab-American Cottons, 1929-30.	Feb. 1930 ..	0 4 0
28	Spinning Test Report (No. 125) on samples of Dholleras and Kadi-Viramgam Cottons, 1929-30.	May 1930 ..	0 4 0
29	Spinning Test Report (No. 126) on samples of Broach Cottons, 1929-30.	May 1930 ..	0 4 0
30	Spinning Test Report (No. 127) on samples of Jagadia Farm, Surat and Navsari Cottons, 1929-30.	May 1930 ..	0 4 0
31	Spinning Test Report (No. 129) on samples of Kalagin Cottons, 1929-30.	June 1930 ..	0 4 0
32	Spinning Test Report (No. 130) on samples of Farm Western, Bijapur, and Bagalkote Cottons, 1929-30.	June 1930 ..	0 4 0
33	Spinning Test Report (No. 131) on samples of Coompta, Cambodia and Karunganni Cottons, 1929-30.	June 1930 ..	0 4 0
34	Spinning Test Report (No. 140) on samples of Westerns, Upland, and Tinnevely Cottons, 1929-30.	July 1930 ..	0 4 0
35	Spinning Test Report (No. 175) on sample of Bengals Cotton, 1930-31.	Nov. 1930 ..	0 4 0
36	Technological Report on Verum 262 (Akola), 1930-31.	Dec. 1930 ..	0 4 0
37	Spinning Test Report (No. 178) on samples of Kampala, Busoga, and Jinja Cottons, 1929-30.	Dec. 1930 ..	0 4 0
38	Technological Report on Verum 262 (Nagpur), 1930-31.	Dec. 1930 ..	0 4 0
39	Spinning Test Report (No. 194) on samples of Khandesh Cottons, 1930-31.	Feb. 1931 ..	0 4 0
40	Spinning Test Report (No. 196) on samples of Ujjain Cottons, 1930-31.	Feb. 1931 ..	0 4 0

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41	Technological Report on Umri-Bani, 1930-31 .. ..	Feb. 1931 ..	0 4 0
42	Technological Report on Punjab-American 289-F, 1930-31.	March 1931..	0 4 0
43	Technological Report on Punjab-American 4F, 1930-31.	March 1931..	0 4 0
44	Spinning Test Report (No. 203) on samples of C. P. No. 1, Muttia, Khandesh and Berar Cotton, 1930-31.	March 1931..	0 4 0
45	Spinning Test Report (No. 204) on samples of Lattur and Nanded Cottons, 1930-31.	March 1931..	0 4 0
46	Spinning Test Report (No. 205) on a sample of New Broach (Salar) Cotton, 1930-31.	March 1931..	0 4 0
47	Spinning Test Report (No. 206) on samples of Jagadia, Bawla and Kadi Cottons, 1930-31.	March 1931..	0 4 0
48	Spinning Test Report (No. 208) on samples of Hubli, Kumpta and Hubli Upland Cottons, 1930-31.	April 1931 ..	0 4 0
49	Spinning Test Report (No. 209) on samples of Surat and Broach Cottons, 1930-31.	April 1931 ..	0 4 0
50	Spinning Test Report (No. 213) on samples of Bailhongal and Hubli-Kumpta Cottons, 1930-31.	May 1931 ..	0 4 0
51	Spinning Test Report (No. 214) on samples of Punjab-American, Jagadia Farm and Navsari Cottons, 1930-31.	May 1931 ..	0 4 0
52	Spinning Test Report (No. 215) on samples of Karunganni and Karnool-Cambodia Cottons, 1930-31.	June 1931 ..	0 4 0
53	Spinning Test Report (No. 217) on a sample of Nandyal Cotton, 1930-31.	June 1931 ..	0 4 0
54	Spinning Test Report (No. 218) on samples of Surat, Navsari and Cambodia Cottons, 1930-31.	June 1931 ..	0 4 0
55	Spinning Test Report (No. 229) on samples of Dholleras, Westerns, Farm Westerns and Kumpta Cottons, 1930-31.	July 1931 ..	0 4 0
56	Spinning Test Report (No. 228) on samples of A. R. Kampala, A. R. Busoga, and A. R. Jinja Cottons, 1930-31.	August 1931.	0 4 0
57	Spinning Test Report (No. 239) on samples of Kalagin, Bijapur and Bhagalkote Cottons, 1930-31.	August 1931.	0 4 0
58	Spinning Test Report (No. 240) on samples of Upland Cambodia and Karunganni Cottons, 1930-31.	August 1931.	0 4 0
59	Spinning Test Report (No. 245) on samples of Kadi-Viramgam and Tinnevely Cotton, 1930-31.	Sept. 1931 ..	0 4 0
60	Spinning Test Report (No. 258) on sample of Dhulia (Khandesh) Cotton, 1931-32.	Dec. 1931 ..	0 4 0
61	Technological Report on Umri-Bani, 1931-32 .. ..	Jan. 1932 ..	0 4 0
62	Technological Report on Verum 262 (Akola) .. ..	Jan. 1932 ..	0 4 0
63	Spinning Test Report (No. 259) on samples of Ujjain Cottons, 1931-32.	Feb. 1932 ..	0 4 0
64	Spinning Test Report (No. 260) on samples of Khandesh Cottons, 1931-32.	Feb. 1932 ..	0 4 0
65	Technological Report on Verum 262 (Nagpur) ..	Feb. 1932 ..	0 4 0

TECHNOLOGICAL CIRCULARS—*contd.*

Circular No.	Title.	Date of Publication.	Price.
			Rs. a. p.
66	Technological Report on Punjab-American 289F, 1931-32.	Feb. 1932 ..	0 4 0
67	Technological Report on Punjab-American 4F, 1931-32.	Feb. 1932 ..	0 4 0
68	Technological Report on Jayawant (Kumpta), 1931-32.	April 1932 ..	0 4 0
69	Spinning Test Report (No. 272) on samples of Broach (Salar), Bailhongal and Hubli-Kumpta Cottons, 1931-32.	May 1932 ..	0 4 0
70	Spinning Test Report (No. 273) on samples of Jagadia and Kadi Cottons, 1931-32.	May 1932 ..	0 4 0
71	Spinning Test Report (No. 275) on samples of Hubli-Kumpta and Hubli Upland Cottons, 1931-32.	May 1932 ..	0 4 0
72	Spinning Test Report (No. 276) on samples of C. P. No. 1, Muttia and Berar Cottons, 1931-32.	May 1932 ..	0 4 0
73	Spinning Test Report (No. 277) on samples of Latur and Nanded Cottons, 1931-32.	May 1932 ..	0 4
74	Spinning Test Report (No. 279) on samples of Surat and Broach Cottons, 1931-32.	June 1932 ..	0 4 0
75	Spinning Test Report (No. 280) on samples of Punjab-American, Jagadia Farm, and Navsari Cottons, 1931-32.	June 1932 ..	0 4 0
76	Spinning Test Report (No. 281) on samples of Dhollera, Westerns and Kumpta Cottons, 1931-32.	July 1932 ..	0 4 0
77	Spinning Test Report (No. 288) on samples of Bijapur and Tinnevely Cottons, 1931-32.	July 1932 ..	0 4 0
78	Spinning Test Report (No. 289) on samples of Upland Cambodia and Karunganni Cottons, 1931-32.	July 1932 ..	0 4 0
79	Spinning Test Report (No. 302) on samples of Kadi Viramgam and Khandesh Cottons, 1931-32.	August 1934.	0 4 0
80	Spinning Test Report (No. 303) on samples of Kalagin and Bagalkote Cottons, 1931-32.	August 1934.	0 4 0
81	Spinning Test Report (No. 319) on samples of A. R. Kampala, A. R. Busoga and A. R. Jinja Cottons, 1931-32.	Oct. 1932 ..	0 4 0
82	Technological Report on Punjab-American, 1932-33 ..	Dec. 1932 ..	0 0
83	Technological Report on Verum 262 (Akola) ..	Jan. 1933 ..	0 4 0
84	Spinning Test Report (No. 338) on samples of Bengals and Ujjain Cottons, 1932-33.	Jan. 1933 ..	0 4 0
85	Spinning Test Report (No. 339) on samples of Khandesh and Moglai Cottons, 1931-32.	Jan. 1933 ..	0 4 0
86	Technological Report on Umri-Bani, 1932-33 ..	Jan. 1933 ..	0 4 0
87	Technological Report on Verum 262 (Nagpur) ..	Jan. 1933 ..	0 4 0
88	Spinning Test Report (No. 348) on samples of Ujjain Cotton, 1932-33.	Feb. 1933 ..	0 4 0
89	Technological Report on Punjab-American 4F, 1932-33.	March 1933..	0 4 0
90	Spinning Test Report (No. 352) on samples of Broach Cotton, 1932-33.	March 1933..	0 4 0
91	Spinning Test Report (No. 353) on samples of Khandesh Cotton, 1932-33.	April 1933 ..	0 4 0



TECHNOLOGICAL CIRCULARS—*contd.*

Circular No.	Title.	Date of Publication.	Price.
			Rs. a. p.
92	Spinning Test Report (No. 356) on samples of C. P. No. 1 and Berar Cottons, 1932-33.	April 1933 ..	0 4 0
93	Spinning Test Report (No. 357) on samples of Latur and Nanded Cottons, 1932-33.	April 1933 ..	0 4 0
94	Technological Report on Surat 1027 A.L.F., 1932-33.	April 1933 ..	0 4 0
95	Spinning Test Report (No. 360) on samples of Hubli-Kumpta and Hubli Upland Cottons, 1932-33.	April 1933 ..	0 4 0
96	Spinning Test Report (No. 361) on samples of Surat, Tiruppur Cambodia and African Busoga Cottons, 1932-33.	May 1933 ..	0 4 0
97	Spinning Test Report (No. 366) on samples of Bailhongal and Farm Westerns Cottons, 1932-33.	May 1933 ..	0 4 0
98	Spinning Test Report (No. 368) on samples of Jagadia Cotton, 1932-33.	May 1933 ..	0 4 0
99	Spinning Test Report (No. 369) on a sample of Navsari Cotton, 1932-33.	May 1933 ..	0 4 0
100	Spinning Test Report (No. 370) on samples of Broach and Surat Cottons, 1932-33.	June 1933 ..	0 4 0
101	Spinning Test Report (No. 371) on samples of Navsari, Jagadia and Rajpipla Cottons, 1932-33.	June 1933 ..	0 4 0
102	Spinning Test Report (No. 389) on samples of Dholleras and Kadi-Viramgam Cottons, 1932-33.	August 1933.	0 4 0
103	Spinning Test Report (No. 390) on samples of Muttia and Kalagin Cottons, 1932-33.	August 1933.	0 4 0
104	Spinning Test Report (No. 392) on samples of Tinnevely and Karunganni Cottons, 1932-33.	Sept. 1933 ..	0 4 0
105	Spinning Test Report (No. 393) on samples of Westerns and Farm Westerns Cottons, 1932-33.	Sept. 1933 ..	0 4 0
106	Spinning Test Report (No. 394) on samples of Kumpta and Upland Cottons, 1932-33.	Sept. 1933 ..	0 4 0
107	Spinning Test Report (No. 395) on samples of Punjab-American and Cambodia Cottons, 1932-33.	Sept. 1933 ..	0 4 0
108	Spinning Test Report (No. 396) on samples of Bijapur and Bagalkote Cottons, 1932-33.	Sept. 1933 ..	0 4 0
109	Spinning Test Report (No. 397) on samples of A. R. Kampala, A. R. Busoga and A. R. Jinja Cottons, 1932-33.	Sept. 1933 ..	0 4 0
110	Technological Report on Umri Bani, 1933-34	.. Dec. 1933 ..	0 4 0
111	Technological Report on Verum 262 (Akola) ..	.. Jan. 1934 ..	0 4 0
112	Spinning Test Report (No. 438) on samples of Khandesh and Bengals Cottons, 1933-34.	Feb. 1934 ..	0 4 0
113	Spinning Test Report (No. 440) on samples of Ujjain Cotton, 1933-34.	Feb. 1934 ..	0 4 0
114	Technological Report on Punjab-American 289F, 1933-34.	Feb. 1934 ..	0 4 0
115	Technological Report on Verum 262 (Nagpur)	.. Feb. 1934 ..	0 4 0
116	Spinning Test Report (No. 443) on samples of C.P. No. 1 and Berar Cottons, 1933-34.	Feb. 1934 ..	0 4 0

TECHNOLOGICAL CIRCULARS.—*contd.*

Circular No.	Title.	Date of Publication.	Price.
			Rs. a. p.
117	Spinning Test Report (No. 444) on samples of Khandesh Cotton, 1933-34.	Feb. 1934 ..	0 4 0
118	Spinning Test Report (No. 446) on samples of Ujjain (Mandsaur) Cotton, 1933-34.	Feb. 1934 ..	0 4 0
119	Spinning Test Report (No. 447) on samples of Mogla Cotton, 1933-34.	Feb. 1934 ..	0 4 0
120	Technological Report on Punjab-American Cotton, 1933-34.	4F, March 1934..	0 4 0
121	Spinning Test Report (No. 457) on samples of Muttia Cotton, 1933-34.	March 1934..	0 4 0
122	Spinning Test Report (No. 458) on samples of Lattur and Nanded Cottons, 1933-34.	March 1934..	0 4 0
123	Spinning Test Report (No. 462) on samples of Hubli Kumpta and Hubli Upland Cottons, 1933-34.	April 1934 ..	0 4 0
124	Spinning Test Report (No. 463) on samples of Broach and Surat Cottons, 1933-34.	April 1934 ..	0 4 0
125	Spinning Test Report (No. 464) on samples of Punjab-American Cotton, 1933-34.	April 1934 ..	0 4 0
126	Spinning Test Report (No. 467) on samples of Westerns and Miraj Cottons, 1933-34.	May 1934 ..	0 4 0
127	Technological Report on Surat 1027 A. L. F., 1933-34 ..	May 1934 ..	0 4 0
128	Technological Report on Hagari 1, 1933-34 ..	May 1934 ..	0 4 0
129	Technological Report on Cambodia Co. 2 (Cambodia 440), 1933-34.	May 1934 ..	0 4 0
130	Technological Report on Gadag 1, (Dharwar-American), 1933-34.	May 1934 ..	0 4 0
131	Spinning Test Report (No. 469) on samples of Surat and Tiruppur Cambodia Cottons, 1933-34.	May 1934 ..	0 4 0
132	Spinning Test Report (No. 470) on samples of Farm Westerns Cotton, 1933-34.	May 1934 ..	0 4 0
133	Spinning Test Report (No. 471) on samples of Kumpta Cotton, 1933-34.	May 1934 ..	0 4 0
134	Spinning Test Report (No. 472) on samples of Jagadia Cotton, 1933-34.	May 1934 ..	0 4 0
135	Technological Report on Jayawant (Kumpta), 1933-34	June 1934 ..	0 4 0
136	Spinning Test Report (No. 481) on samples of Dholleras Cotton, 1933-34.	July 1934 ..	0 4 0
137	Spinning Test Report (No. 482) on samples of Kalagin Cotton, 1933-34.	July 1934 ..	0 4 0
138	Spinning Test Report (No. 483) on samples of Westerns Cotton, 1933-34.	July 1934 ..	0 4 0
139	Spinning Test Report (No. 487) on samples of Bailhongal Cotton, 1933-34.	July 1934 ..	0 4 0
140	Spinning Test Report (No. 488) on samples of Farm Westerns and Tirupur Cambodia Cottons, 1933-34.	July 1934 ..	0 4 0
141	Spinning Test Report (No. 489) on samples of Broach Cotton, 1933-34.	July 1934 ..	0 4 0
142	Spinning Test Report (No. 490) on samples of Jagadia Cotton, 1933-34.	July 1934 ..	0 4 0

TECHNOLOGICAL CIRCULARS—*contd.*

Circular No.	Title.	Date of Publication.	Price.
			Rs. a. p.
143	Spinning Test Report (No. 491) on samples of Bawla and Kadi Cottons, 1933-34.	July 1934 ..	0 4 0
144	Spinning Test Report (No. 498) on samples of Karunganni Cotton, 1933-34.	August 1934.	0 4 0
145	Spinning Test Report (No. 503) on samples of Navsari Cotton, 1933-34.	August 1934.	0 4 0
146	Spinning Test Report (No. 504) on samples of Cambodia Cotton, 1933-34.	August 1934.	0 4 0
147	Spinning Test Report (No. 509) on samples of Kadi-Viramgam Cotton, 1933-34.	August 1934.	0 4 0
148	Spinning Test Report (No. 510) on samples of Tinnevely Cotton, 1933-34.	August 1934.	0 4 0
149	Spinning Test Report (No. 511) on samples of Bagalkote Cotton, 1933-34.	August 1934.	0 4 0
150	Spinning Test Report (No. 514) on samples of A. R. Kampala, A. R. Busoga, and A. R. Jinja Cottons, 1933-34.	Sept. 1934 ..	0 4 0
151	Spinning Test Report (No. 515) on samples of Bijapur Cotton, 1933-34.	Sept. 1934 ..	0 4 0
152	Spinning Test Report (No. 516) on samples of Upland Cotton, 1933-34.	Sept. 1934 ..	0 4 0
153	Spinning Test Report (No. 517) on samples of Karunganni Cotton, 1933-34.	Sept. 1934 ..	0 4 0
154	Technological Report on Verum 262 (Nagpur), 1934-35.	Dec. 1934 ..	0 4 0
155	Technological Report on Verum 262 (Akola), 1934-35 ..	Dec. 1934 ..	0 4 0
156	Technological Report on Umri Bani, 1934-35 ..	Jan. 1935 ..	0 4 0
157	Technological Report on Punjab-American 280F, 1934-35.	Jan. 1935 ..	0 4 0
158	Spinning Test Report (No. 559) on samples of C. P. No. 1 Cotton, 1934-35.	Feb. 1935 ..	0 4 0
159	Spinning Test Report (No. 560) on samples of Berar Cotton, 1934-35.	Feb. 1935 ..	0 4 0
160	Spinning Test Report (No. 561) on samples of Khandedesh Cotton, 1934-35.	Feb. 1935 ..	0 4 0
161	Spinning Test Report (No. 566) on samples of Khandedesh Cotton, 1934-35.	Feb. 1935 ..	0 4 0
162	Spinning Test Report (No. 567) on samples of Moglaj Cotton, 1934-35.	Feb. 1935 ..	0 4 0
163	Spinning Test Report (No. 568) on samples of Bengals Cotton, 1934-35.	Feb. 1935 ..	0 4 0
164	Spinning Test Report (No. 570) on samples of Ujjain (Ujjain) Cotton, 1934-35.	Feb. 1935 ..	0 4 0
165	Spinning Test Report (No. 571) on samples of Ujjain (Mandsaur) Cotton, 1934-35.	Feb. 1935 ..	0 4 0
166	Spinning Test Report (No. 577) on Samples of Hubli Kumpta Cotton, 1934-35.	March 1935..	0 4 0
167	Technological Report on Gadag I (Dharwar-American), 1934-35.	April 1935 ..	0 4 0

TECHNOLOGICAL CIRCULARS.—*contd.*

Circular No.	Title.	Date of Publication.	Price.
			Rs. a. p.
168	Spinning Test Report (No. 582) on samples of Latur Cotton, 1934-35.	April 1935 ..	0 4 0
169	Spinning Test Report (No. 583) on samples of Nanded Cotton, 1934-35.	April 1935 ..	0 4 0
170	Spinning Test Report (No. 584) on samples of Muttia Cotton, 1934-35.	April 1935 ..	0 4 0
171	Spinning Test Report (No. 591) on samples of Broach Cotton, 1934-35.	June 1935 ..	0 4 0
172	Spinning Test Report (No. 592) on samples of Jagadia Cotton, 1934-35.	June 1935 ..	0 4 0
173	Spinning Test Report (No. 593) on samples of Punjab-American Cotton, 1934-35.	June 1935 ..	0 4 0
174	Spinning Test Report (No. 595) on samples of Bailhongai Cotton, 1934-35.	June 1935 ..	0 4 0
175	Spinning Test Report (No. 596) on samples of Broach Cotton, 1934-35.	June 1935 ..	0 4 0
176	Spinning Test Report (No. 597) on samples of Karunganni Cotton, 1934-35.	June 1935 ..	0 4 0
177	Spinning Test Report (No. 598) on samples of Tiruppur Cambodia Cotton, 1934-35.	June 1935 ..	0 4 0
178	Spinning Test Report (No. 599) on samples of Northern Cambodia Cotton, 1934-35.	June 1935 ..	0 4 0
179	Spinning Test Report (No. 600) on samples of Farm Westerns Cotton, 1934-35.	June 1935 ..	0 4 0
180	Spinning Test Report (No. 601) on samples of Westerns Cotton, 1934-35.	June 1935 ..	0 4 0
181	Spinning Test Report (No. 602) on samples of Miraj Cotton, 1934-35.	June 1935 ..	0 4 0
182	Spinning Test Report (No. 603) on samples of Nandyal Cotton, 1934-35.	June 1935 ..	0 4 0
183	Spinning Test Report (No. 604) on samples of Surat Cotton, 1934-35.	July 1935 ..	0 4 0
184	Spinning Test Report (No. 606) on samples of Tiruppur Cambodia Cotton, 1934-35.	July 1935 ..	0 4 0
185	Spinning Test Report (No. 607) on samples of African Busoga Cotton, 1934-35.	July 1935 ..	0 4 0
186	Spinning Test Report (No. 608) on samples of Kampala Cotton, 1934-35.	July 1935 ..	0 4 0
187	Spinning Test Report (No. 609) on samples of Hubli Upland Cotton, 1934-35.	July 1935 ..	0 4 0
188	Technological Report on Punjab-American 4F, 1934-35.	July 1935 ..	0 4 0
189	Technological Report on Surat 1027 A.L.F., 1934-35 ..	July 1935 ..	0 4 0
190	Spinning Test Report (No. 612) on samples of Kalagin Cotton, 1934-35.	July 1935 ..	0 4 0
191	Spinning Test Report (No. 613) on samples of Farm Westerns Cotton, 1934-35.	July 1935 ..	0 4 0
192	Technological Report on Jayawant(Kumpta), 1934-35.	Aug. 1935 ..	0 4 0
193	Technological Report on Cambodia Co. 2 (Cambodia 440) 1934-35.	Aug. 1935 ..	0 4 0

## TECHNOLOGICAL CIRCULARS.—concl'd.

Circular No.	Title.	Date of Publication.	Price.
			Rs. a. p.
194	Spinning Test Report (No. 620) on samples of Navsari Cotton, 1934-35.	Aug. 1935 ..	0 4 0
195	Spinning Test Report (No. 621) on samples of Upland Cotton, 1934-35.	Aug. 1935 ..	0 4 0
196	Spinning Test Report (No. 624) on samples of Dhollerias Cotton, 1934-35.	Sept. 1935 ..	0 4 0
197	Spinning Test Report (No. 626) on samples of Westerns Cotton, 1934-35.	Sept. 1935 ..	0 4 0
198	Spinning Test Report (No. 627) on samples of Surat Cotton, 1934-35.	Sept. 1935 ..	0 4 0
199	Spinning Test Report (No. 628) on samples of Tinnevely Cotton, 1934-35.	Sept. 1935 ..	0 4 0
200	Spinning Test Report (No. 630) on samples of Cambodia Cotton, 1934-35.	Sept. 1935 ..	0 4 0
201	Spinning Test Report (No. 631) on samples of Karunganni Cotton, 1934-35.	Sept. 1935 ..	0 4 0
202	Spinning Test Report (No. 633) on samples of Bijapur Cotton, 1934-35.	Sept. 1935 ..	0 4 0
203	Spinning Test Report (No. 634) on samples of Bagalkote Cotton, 1934-35.	Sept. 1935 ..	0 4 0
204	Spinning Test Report (No. 635) on samples of A. R. Jinja Cotton, 1934-35.	Sept. 1935 ..	0 4 0
205	Spinning Test Report (No. 637) on samples of A. R. Busoga Cotton, 1934-35.	Sept. 1935 ..	0 4 0
206	Spinning Test Report (No. 638) on samples of A. R. Kampala Cotton, 1934-35.	Sept. 1935 ..	0 4 0
207	Spinning Test Report (No. 640) on samples of Kumpta Cotton, 1934-35.	Sept. 1935 ..	0 4 0

## TECHNOLOGICAL LEAFLETS.

Leaflet No.	Title.	Date of Publication.
1	Note on the harmful effects of adulterating good quality Indian cottons .. .. .	October 1932.
2	Note on Green-stained Sind-American cotton .. .. .	October 1932.
3	Blow-Room Treatment in relation to Leafiness in cotton ..	March 1933.
4	Blow-Room Treatment for a Long-staple cotton .. ..	April 1933.