TRC

TEXTILE TOPICS

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PUBLICATION NOTICE Because of several comments received recently, we feel it may be helpful to make a statement concerning the publication frequency of *Textile Topics*. Our intent has been to publish this one time each month throughout the year. Since our fiscal year begins on September 1, all our activities are geared to that date. Therefore, the first issue of each volume of *Topics* is dated September, and the twelfth issue is made the following August.

We received a letter from England recently making note that we apparently are sending *Topics* to overseas recipients by surface mail. Other comments have suggested that it appears we are publishing *Topics* on a quarterly basis. Neither case is true. The fact is we are still publishing on a monthly basis, but we must admit (with some embarrassment) that we are a bit behind. For example, the July 1983 copy was not mailed until about the middle of September, and we hope to release this issue by mid-October.

We regret that our research and academic programs have taken a great amount of our time and have not permitted us to prepare *Textile Topics* more nearly as planned. We hope to rectify this situation soon and have our mailings back on schedule within a month or two.

COTTON MATURITY From time to time we have reported on studies conducted at the Textile Research Center that have investigated cotton fiber maturity, its relationship to yarn and fabric quality, and its influence on dyeability. The February 1982 issue of *Textile Topics* (Vol. X, No. 6) carried a review of a program dealing with this subject that was conducted here by Dr. Christopher J. Lupton. Since that time, we have installed an IIC Shirley Fineness/Maturity Tester, Series 2 for measuring micronaire, percent mature fibers, and fiber fineness. This instrument has contributed significantly to our studies.

The July 1983 issue of *Topics* carried an article entitled "Discount Cottons" which stated that while micronaire does indicate maturity in some cottons, this is not necessarily true for all cottons. Certain varieties produced in the Lubbock area mature below the 3.5 premium price level, and we feel that a measure of maturity other than micronaire would be of more value to cotton producers and textile manufacturers.

Recently the Textile Research Center conducted a program for the Natural Fibers & Food Protein Commission of Texas which was designed to determine cotton fiber maturity by instrument and compare the values obtained with standard micronaire readings. Fifteen cottons of different varieties were selected for this program, some of them available commercially and the remainder experimental lots from agricultural research. Eight samples of each variety were tested on the Shirley F/MT to obtain micronaire, percent maturity, and fineness. The results are presented in Table I on the following page.

The micronaire value established by the Shirley F/MT is the same as that obtained by HVI systems and individual Fibronaire instruments. The maturity reported is the percent mature fibers in the samples tested, and the fineness is expressed in millitex. In general, the micronaire measurements in this test correlated well with percent mature fibers and fineness. Some interesting points we feel worthy of note are:

1) Sample 1 had a micronaire value of 3.6 and a maturity of 82.8%, while Sample 5 had a 3.7 micronaire but a maturity of only 78%.
2) Sample 1 had a fineness of 140 millitex while Sample 5 had 153 millitex.
3) Sample 6 had the highest micronaire reading, the highest maturity percentage and the greatest fineness measurement. On the other hand, Sample 8 appeared to be truly an immature fiber with a micronaire value of 2.8, maturity of 68.5% and a fineness of 119 millitex.
4) A study of the varieties that measured 3.7 micronaire (Samples 5, 12, 13 and 15) shows that

TABLE I

Fineness/Maturity Values
(IIC Shirley F/MT)

Sample Number	Micronaire Value	Maturity (%)	Fineness (Millitex)
1	3.6	82.8	140
2	3.4	79.9	136
3	3.5	80.1	142
4	3.5	77.2	144
5	3.7	78.0	153
6	4.2	86.4	164
7	3.6	80.4	141
8	2.8	68.5	119
9	3.9	79.4	145
10	3.2	71.9	137
11	3.8	81.5	150
12	3.7	81.0	148
13	3.7	81.9	146
14	3.6	79.6	145
15	3.7	82.2	146

all but Sample 5 had very close maturity percentages and fineness measurements.

5) In general, the samples with 3.5 to 3.8 micronaire were very similar in maturity and fineness. However, Samples 4 and 5 were exceptions in that their maturity values were lower. An interesting comparison can be made between Samples 3 and 4 which had 3.5 micronaire values but different maturity percentages.

We realize this sampling is quite small and should not be used to make long-term conclusions. Therefore, we are presenting this information only to show what may result when making micronaire and maturity comparisons. This study is continuing and we expect to have more conclusive data in the future.

An interesting addition to this program evolved when it was decided to use the fiber testing results for predicting yarn strength. Because the amount of cotton available for each variety was too small for spinning separately, all 120 samples were blended together for one program. The blend was processed through standard opening and carding at TRC and then carried through drawing for open-end spinning. Two yarn numbers were spun, N_e 10/1 and 20/1. Fiber testing was conducted on our Motion Control HVI system on samples taken from the chute feed to our cards. Test results of the blend are given in Table II.

From the HVI results, we projected the break factor of the 10/1 yarn using a 5.00 twist multiplier and found this to be 2447. Actually, the CSP for this yarn was 2433 (Table III). This is sufficiently close to be of value to yarn manufacturers. We have found that the results from fiber testing are useful in predicting yarn strength and we recommend this procedure to those in industry who are producing yarns and fabrics with high strength requirements.

We would like to express our appreciation to the Natural Fibers & Food Protein Commission of Texas for permitting the publication of information obtained in one of their research programs.

TABLE II

Fiber Properties

Micronaire	3.6
Maturity (%)	79.46
Fineness (mtex)	144
Length:	
UHM (in)	0.96
Length Uniformity (%)	78
Fiber Strength:	
Grams/Tex (1/8")	26
Elongation (%)	6.1
Shirley Non-lint (%)	2.4
Color Grade	21

TABLE III

Yarn Properties

Nominal Yarn Number (N_e)	10/1	20/1
Uster Non-Uniformity (%)	13.92	15.53
IPI Thin Count/1,000 yds	4	28
IPI Thick Count/1,000 yds	44	117
IPI Nep Count/1,000 yds	54	204
Uster Elongation (%)	9.60	8.00
Strength (g)	819	378
Strength (g/tex)	14.19	13.14
Strength (CV%)	4.9	6.9
Actual Yarn Number (N_e)	10.19	20.31
Yarn Number CV%	1.35	1.29
Strength (lbs)	241	104
Strength (CV%)	1.91	2.40
Break Factor	2433	2125
Break Factor (CV%)	1.27	2.29
Hairs/100 yds	276	106
ASTM Yarn Grade	B	B+

CONGRESSMAN VISITS CENTER U. S. Representative Jerry Huckaby of Louisana's 5th District visited the Textile Research Center recently to study the evaluation and processing procedures for cotton. He was accompanied by Macon E. Edwards, vice president of the National Cotton Council, Washington, D. C.; Ed Breihan, president and general manager of the Plains Coop Oil Mill, Lubbock, Texas and past president of the National Cotton Council; and Jerry Harris, operator of the Mesa Gin, Lamesa, Texas. Congressman Huckaby expressed considerable interest in cotton fiber testing by electronic instruments and the relationship between fiber properties and yarn and fabric quality.

Harry Arthur, Associate Director of TRC (2nd from right), explains air jet weaving to Macon Edwards (left), Ed Breihan and Congressman Huckaby (next to Arthur) as Jerry Harris looks on at right.

Rep. Huckaby (left) discusses open-end spinning of Texas cotton with (left to right) Edwards, Breihan and Jerry Harris.

We were pleased to have these visitors at the Center, and we were impressed with Representative Huckaby's interest in the processing and utilization of cotton.

TEXTILE EDUCATION The fall semester at Texas Tech University began during the last week of August with slightly more than 24,000 students enrolled. This is an increase over recent years during which there has been an almost steady enrollment of 23,000. We are pleased with the quality of the students enrolled in the Department of Textile Engineering this year, many of whom were employed during the summer months by various textile companies. This industrial experience makes required lecture and laboratory studies more meaningful.

A number of our students have received scholarships from the Textile Research and Scholarship Foundation. These are Lori Rene Alread, Joe Don Long, Mary Ann Owen, Keith D. Soechting, Stacey Stone and Andrew Talbott.

VISITORS In addition to Representative Huckaby and his friends, whom we have already mentioned, we were pleased to have a number of other visitors during August. These included Mrs. Larry Johnson, Houston, TX; Stewart Dyer, John D. Hollingsworth on Wheels, Greenville, SC; Robert Pacotti, Mettler Instrument Corp., Hightstown, NJ; William Jackson, Fisher Scientific Company, Plano, TX; David Dale, Kellwood Company, McComb, MS; Deedee Williams and Rodney Fuller, WestPoint Pepperell, West Point, GA; Scott Gessner and Steve Krupp, Dow Chemical Company, Freeport, TX; Ludwig Neuhaus, W. Schlafhorst & Co., Monchengladbach, West Germany; Helmut Deussen, American Schlafhorst, Charlotte, NC; D. Bruce Stewart and W. Rennie Stewart, W. R. Stewart & Sons Ltd., Dundee, Scotland; Henry Mika, Gokwe, Zimbabwe; John Coates Palgrave, Harare, Zimbabwe; and S. B. Patil, Ministry of Labour, Bombay, India.