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Mathematical Analysis Of The K1/K2 Data

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Contents

1. Introduction

2. General Approach

3. Mathematical Analysis
   3.1. Yarn Count
   3.2. Stitch Length
   3.3. Wales
   3.4. Courses
   3.5. Weight
   3.6. Spirality Trial

4. Conclusions

1. Introduction

The preliminary mathematical analysis, which was carried out on the data generated by Project CP78 for 20 gauge interlock and 14 gauge 1x1 rib fabrics, was described in *Research Record No. 129.* From the linear regression equations and coefficients developed by this analysis, several computer models have been built which enable predictions of finished fabric dimensions etc. to be made with what, so far, appears to be a fair degree of accuracy for fabrics within the range of the data base.

The report indicated however that a more sophisticated analysis should be undertaken which would, for example, check the statistical significance of some of the apparent differences identified between finishing routes. Ideally, this should have been carried out before tackling the more complex single jersey data base - the subject of this report. However, the need for some guidance on the behaviour of single jersey fabrics became increasingly urgent. Also, it was clear that a great deal of essential information could be accessed and an immediately useful, if unsophisticated, predictive model could be developed by proceeding with a first stage analysis of the single jersey data before a re-analysis of the double jersey results was undertaken.

Initially, a series of preliminary studies was made which examined various aspects of the single jersey results in an attempt to gain an insight into some of the major influences on relaxed dimensions. The full reports on these preliminary assessments are included in the *Final Report to the TPI Steering Group on projects Kl and K2*, but the main conclusions are transcribed here as they helped to shape the analytical approach.

1. Although an independent effect of machine gauge could not be proved, neither could it be unequivocally discounted. However, it may be justified to ignore, in the first instance, the possibility of a gauge influence on the grounds of the importance of establishing the major relationships and the overall scatter in the data.
2. The effect of twist level is small and probably insignificant from a commercial point of view. However, when alternate yarns of equal and opposite twist are knitted there is a definite and significant effect upon fabric dimensions.
3. Fabrics produced from singles and two-fold yarn of the same resultant count, knitted to the same stitch length and finished through the same route have different relaxed dimensions.
4. No consistent differences were found in the fully relaxed dimensions of equivalent fabrics finished through either a tubular or open-width route.
5. Differences in relaxed dimensions of equivalent fabrics processed through different dyeing machines were not considered to be significant from a practical point of view.
6. The effect of piece mercerising on the relaxed dimensions of sets of similar fabrics was significantly different depending on whether mercerising was carried out tubular or open-width.
7. Spirality is influenced by the twist liveliness of the yarn and the tightness of the fabric and the finishing route. There is a strong possibility that spirality can be predicted using twist liveliness and fabric tightness as the main parameters in a mathematical model. However, it will be necessary to develop a method of measuring twist liveliness in finished fabrics.

2. General Approach

Taking into account the conclusions from these reports and the experience of the analysis of the double jersey data, the approach to the analysis of the single jersey data was based on the following assumptions.

1. That the form of the equations developed for interlock and rib fabrics would also be appropriate for single jersey. Therefore, in principle, no preliminary investigation of other models would be carried out with the exception of the "classical" equations.
2. That, similarly to interlock and rib, there would be no effect of fabric tightness (stitch length) on the changes in yarn tex brought about by wet processing. Therefore, average tex values could be calculated for each yarn/finish.
3. Any potential influence of machine gauge on relaxed dimensions would, at this stage, be ignored and the analysis made across gauges.
4. Fabrics from singles and two-fold yarn would be treated independently in respect of finished relaxed dimensions.
5. Although differences between dyeing machines were not found to be of practical significance, individual regression analysis would be performed on all the finishing routes individually - although the major series of Kl fabrics processed through tubular and open-width finishing would also be analysed in combination if this were found to be permissible.
6. The influence, if any, of spirality on relaxed dimensions would be ignored for the time being. A theory for accommodating the effect of spirality in the context of a predictive model will be developed at a later stage.
7. The main thrust of the analysis would concentrate on the fabrics produced for Kl and K2. The spirality trial fabric results will be examined in terms of the regressions established for the equivalent K1 fabrics from yarns of standard twist and twist direction, with the exception of fabrics produced from alternate ends of S and Z twist yarn where results are available over three yarn counts and three machine gauges.

3. Mathematical Analysis

The next few sections summarise the analytical steps which were taken in order of the properties examined. Plots illustrating some of the results are included for each section, but to include every possible variation is prohibitive. A fairly comprehensive graphical representation is on file for consultation as and when required.

3.1. Yarn Count

The yarn count, as knitted, had been measured in our laboratory, by sampling the original cones, and also by Courtaulds Central Technology Unit at Heron Mill, by sampling the residual packages after knitting. Weighted averages were calculated for each yarn count from these two series of measurements. The yarn count in the finished, relaxed state had been measured in our laboratory by withdrawing courses from the relaxed fabrics. For all the finishing routes the five estimates for a given yarn count and finish were averaged to arrive at the finished relaxed count. The original values for count were reported in units of Ne but these were converted to tex before averaging and before the regression analysis was carried out.

Regression analysis was carried out by the least squares method using the model

$$y = a + b \cdot x$$

where y is the finished relaxed tex, x is the tex as knitted, a and b are the regression coefficients.

Initially, the individual coefficients for the K1 series of fabrics were calculated separately for both singles and two-fold yarns and finishing routes. An examination of the results however indicated that it would be possible to first combine the two major finishing routes and, secondly, the singles and two-fold yarns. Finally, all the results with the exception of the mercerised fabrics were included in one combined equation. Individually, the correlation coefficients for each finishing route are always better than r = 0.99 and for the combined equations r is better than 0.999.

Table 1 contains the constants for the equations with their corresponding values for r^2 for all the routes individually and combined. *Figures 1 to 4* illustrate the results of the combined regressions for grey, standard finished, tubular mercerised and open-width mercerised, together with their respective illustrations of calculated *vs*. measured data. *Figure 5* illustrates the four regression lines plotted together without data.

The results seem to indicate that yarn tex is not as sensitive to slight variations in standard finishing routes as appeared to be shown by the double jersey results. Grey relaxed tex is certainly different from dyed and finished relaxed tex but there does not appear to be a significant effect of dyeing procedure. Mercerising certainly has a more dramatic effect on yarn tex and this also appears to be influenced by the method of mercerisation, i.e. tubular *vs*. open-width. There does not appear to be any difference in relaxation between the behaviour of singles and two-fold yarns.

Judging by the very high correlation coefficients and the range of yarns included, Ne 1/16 to Ne 2/80, it would seem likely that the double jersey results could also be included in a joint analysis of compatible routes.

3.2. Stitch Length

Stitch length had been measured in the grey fabric and in the finished relaxed material. Values for stitch length are reported by the laboratory in units of mm but these were converted to cm before the analysis was carried out.

The least squares method of regression analysis was performed on the data using the model

$$y = a + b \cdot x$$

where, y is the finished relaxed stitch length, x the grey relaxed stitch length, a and b are correlation coefficients.

Similarly to the analysis of yarn tex, individual coefficients for the Kl series of fabrics were calculated separately for both singles and two-fold yarns and finishing routes. An examination of the results again indicated that it may be possible to combine the two major finishing routes and secondly the singles and two-fold yarns. The analysis was then performed on the K2 series of fabrics combining singles and two-fold yarns and finally all the standard finishing routes were combined into one regression.

Individually, the correlation coefficients for each finishing route are always better than r = 0.987 and for the combined equation r is better than 0.99.

Table 2 contains the constants for the equations with their corresponding r^2 for all the routes individually and combined. *Figures 6 to 9* illustrate the results of the combined regressions for grey, standard finished, tubular mercerised and open-width mercerised together with their respective illustrations of calculated *vs.* measured data. *Figure 10* illustrates the four regression lines plotted together without data.

Similarly to the comments made regarding yarn tex, it would appear that there is some justification for using the combined equation for standard finishing routes. There does not appear to be a significant influence of dyeing machine or yarn type, i.e. singles or two-fold.

The effect of mercerisation again appears to be dependent on the method of processing - tubular mercerising having a more pronounced influence.

3.3. Wales

As a starting point the "classical" theory which purports that wales/cm can be predicted solely from the reciprocal of stitch length was checked using the model:

$$y = a + b / l$$

where, y is the finished relaxed wales/cm, l is the finished relaxed stitch length, a and b are constants.

As indicated by the preliminary studies, singles and two-fold yarns were treated separately and, with the exception of the major Kl finishing routes which were in addition combined, each finishing route was examined individually.

Similarly to the double jersey analysis, although the equations describe the data reasonably accurately there was still a strong indication that a yarn count effect was present. Consequently the entire analysis was repeated using the following model.

$$y = a + b / l + c \cdot \sqrt{tex}$$

where, a, b, and c are constants, l is the finished relaxed stitch length and tex is the averaged finished relaxed yarn count as measured in the fabrics.

The regression coefficients and corresponding r^2 are tabulated in *Table 3* for both singles and two-fold yarns.

The individual correlation coefficients are always better than 0.977 and average for both singles and two-fold yarns at 0.989. The combined regression for the Kl fabrics through R-95 and RS-OW has a correlation of r = 0.987 for both singles and two-fold yarns.

At this stage, no attempt has been made to try and combine other finishing routes, as without further statistical evaluation it was considered to be unwise. For the time being therefore the individual equations for the K2 routes should probably be used although there is a strong argument for using the combined equation for the Kl fabrics.

Figures 11 to 20 illustrate some of the results.

3.4. Courses

The analysis for courses was exactly analogous to that for the wales described in the previous section with similar conclusions.

The "classic" model,

$$y = a + b / l$$

was checked and found to be capable of improvement so, therefore, the analysis was re-run using

$$courses/cm = a + b / l + c \cdot \sqrt{tex}$$

with a clear improvement in the correlation coefficients. Individual values for r were always better than 0.978, the averages for singles yarns being 0.989 and for two-fold 0.99. The respective combined equations have r values of 0.984 and 0.978.

Similarly, no attempt was made to combine other finishing routes and therefore, the same comments apply as for wales.

Figures 21 to 30 illustrate some of the results. *Table 4* gives the equations.

3.5. Weight

There exist in the single jersey data base three separate estimates of fabric weight for each fabric quality.

- One set (notated “Beta”) contains data obtained using the Beta gauge.
- A second set (Wt C+W) contains data obtained by the “cut & weigh” method.
- The third set of estimates (MnWt) were derived by averaging the measurements of weight made using the β-gauge and the weight calculated from the observed values of courses, wales, tex and stitch length.

The reasons for this apparently anomalous situation are complex and will be the subject of a separate report. For the time being, however, the Mean Weight data are considered to give the most accurate estimates for fabric weight and, as such, have been the only figures used in this analysis. All references to fabric weight made in this report therefore refer exclusively to the Mean Weight data.

As reported in *Research Record No. 129* on the interlock and rib analysis, there are, in principle, three ways to approach the calculation of weight.

1. Weight = courses *x* wales *x* tex *x* stitch length

   where the values for courses, wales, tex, and *l* in the fully-relaxed fabric can be calculated using the regression equations described in the previous sections.

2. Weight = S *x* tex *x* stitch length

   where S, the product of courses and wales, is calculated via a new regression equation. The justification for this approach being that the variability in S tends to be less than that in the individual measurements of courses and wales.

3. Weight = f (tex, stitch length)

   where a new regression equation is developed which uses only finished relaxed tex and stitch length to calculate fabric weight.

The relevant equations already exist if approach No. 1 is considered to be the most desirable. Therefore, no further analysis is required. Both the other two methods however require additional equations to be developed and these are considered in the following two sections.

Calculation via Stitch Density, S

The analysis of the double jersey data indicated that the most suitable equation for predicting stitch density was:

$$S = a + b / l^2 + c \cdot tex$$

where, l^2 is the square of stitch length as measured in the relaxed fabric, *tex* is the measured relaxed tex and *a*, *b* and *c* are constants.

Table 6 gives the regression coefficients and r^2 values for each route.

The correlation coefficients r are always better than 0.988 and average 0.995 for singles yarns and 0.994 for two-fold yarns.

However, two other models were also checked for all the data.

The simplest "classical" equation is

$$y = a + b / l^2$$

and the most complicated model that could be derived from the already-studied equations for course and wale densities is

$$y = a + b / l^2 + c \cdot tex + d \cdot \sqrt{tex} / l$$

Average values for r were:

for the simple model, 0.992 for singles yarns and 0.993 for two-fold yarns and,

for the more complicated model, 0.995 for both singles and two-fold yarns.

Similarly to the double jersey analysis there was no significant gain in correlation by including a fourth term. However, it is obvious from these results why the model

$$y = a + b / l^2$$

has been long preferred by "classical" theory. This notwithstanding, the model

$$S = a + b / l^2 + c \cdot tex$$

is preferred as it will probably have a more universal application, e.g. across structures where the influence of changes in tex is more pronounced.

Figures 31 to 41 illustrate some of the results. The equation used to calculate the curves on these graphs was actually the more complicated, four-term model but it is unlikely that the preferred equation would have appeared to draw a different line.

An inspection of these graphs will illustrate the lack of a significant influence of yarn tex and it would appear that even the mercerised fabrics could in this case be included in a single joint regression.

The calculation of weight via a regression for stitch density may yet prove to be the most reliable method.

Direct Regression Against Weight

The model found to give the best results for interlock and rib fabrics was:

$$y = a + b \cdot tex / l$$

where, *y* is the finished relaxed fabric weight, *tex* is the measured relaxed average tex, *l* the relaxed stitch length, and *a* and *b* are constants.

This model was therefore applied to the single jersey data.

Table 6 lists the regression coefficients and r^2 values for each finishing route. The individual values for r were always better than 0.98 and averaged 0.983 for singles yarns and 0.986 for two-fold yarns. The combined regressions for K1 finished fabrics were 0.99 and 0.98, singles and two-fold.

Figures 42 to 51 illustrate some of the results.

3.6. Spirality Trial

As stated in Paragraph 7 in Section 2, the results obtained from the fabrics included in the spirality trial were to be be examined in terms of the regressions established for the standard K1 fabrics.

The Kl control finish for the spirality trial fabrics was RotoStream Dye, Open-width finish (RS-OW) and therefore the equations for this route are those used for comparison.

The coefficients and r^2 values for the regression equations for fabrics made from alternate ends of S and Z twist yarns are given in *Table 7*. The same models were used as for the main analysis.

Figures 52 to 57 illustrate some results.

An examination of these plots suggests the following:-

Yarn Count

The standard combined equation for singles yarns would appear to adequately describe the behaviour of the “non-standard” (high-twist and low-twist) yarns. These data could therefore be included in any recalculation of the coefficients. For the time being, however, the combined equation as it exists could be used in any predictive model.

Stitch Length

The above observations for yarn count apply equally to stitch length.

Courses, Wales, Weight and Stitch Density

Although discrepancies can be found in the graphs, which would appear to indicate an effect of twist level/direction, the differences are in the main small. In the absence of a more sophisticated analysis the equations derived from the K1 series can probably be used reasonably confidently if guidelines are required for fabrics knitted from yarns with high, low or reverse twist - at least within the range of twist factors 3.0 to 4.0.

However, for the S&Z fabrics, separate regressions for courses and wales are essential and they do describe the data with reasonable precision. Separate equations for weight and stitch density are also probably justified but the differences are much smaller and will need testing for significance.

4. Conclusions

1. A set of empirical equations have been developed which can be used to predict the fully-relaxed dimensions of a wide range of plain single jersey fabrics with a high degree of precision.

2. There is strong evidence to support the opinion that universal equations (i.e. across structures) can be developed to predict the changes in tex and stitch length brought about by wet processing. The IIC Reference Relaxation Procedure, or indeed any shrinkage test, is, of course, also a wet process. Separate consideration regarding the finishing route is only required for those processes which in some way chemically modify the cotton, e.g. mercerising, crosslinking.

3. Judging by the small and probably insignificant differences observed between different jet dyeing machines on the properties under consideration, there is evidence to suggest that combined equations can be developed, for each structure probably but also potentially across structures. Winch dyeing and winch/continuous bleaching should probably not be included without further experimental data on single jersey fabrics.

4. The differences observed, between similar fabrics produced from singles and two-fold yarns, re-emphasise the probability that at least one other parameter besides yarn count and stitch length is needed to explain dimensional changes (e.g. yarn bulk, surface friction, stiffness etc.).

5. The radical effect of combining yarns of opposite twist on the relaxed dimensions of a fabric, although significant in practice probably only applies to plain single jersey constructions. Therefore the equations developed should be adequate for the time being at least.

6. The effect of varying twist levels appears to be small in practical terms, although a statistical analysis should probably be carried out. For the time being the equations developed for fabrics made from “standard” singles yarns processed through “standard” finishing routes should prove adequate. This may not apply to mercerised or crosslinked fabrics

Table 1

SINGLE JERSEY : PREDICTION OF FIN FR TEX FROM AV TEX AS KNITTED

Model: y = a + bx

FINISHING	a	b	r^2
Singles Yarns			
G	-0.1290	0.9745	0.9996
R-95	0.0663	0.9591	0.9996
RS-OW	0.0833	0.9513	0.9995
R-95 + RS-OW	0.0748	0.9552	0.9994
2-Fold Yarns			
G	-0.2594	0.9913	0.9995
R-95	-0.5674	0.9955	0.9994
RS-OW	-0.6274	0.9926	0.9998
R-95 + RS-OW	-0.5974	0.9941	0.9995
Combined Singles+2-Fold			
G	-0.2081	0.9836	0.9991
R-95 + RS-OW	-0.2717	0.9753	0.9988
RS	-0.3915	0.9806	0.9989
SS	0.3541	0.9425	0.9996
WD	0.1379	0.9465	0.9982
Brazz.	-0.1185	0.9614	0.9991
RS-E	0.4429	0.9438	0.9963
R-95,RS-OW,RS, SS,WD,Brazz. RS-E	-0.2661	0.9746	0.9988
Mercerised			
Omez	-0.1921	1.0318	0.9977
Kwfrs.	-0.7937	1.0217	0.9999

Table 2

SINGLE JERSEY: PREDICTION OF FFR SL FROM SL AS KNITTED

Model: $y = a + bx$

FINISHING	a	b	r^2
Singles Yarns			
G	0.0098	0.9571	0.9938
R-95	0.0114	0.9450	0.9900
RS-OW	0.0120	0.9416	0.9828
R-95 + RS-OW	0.0117	0.9433	0.9864
2-Fold Yarns			
G	0.0074	0.9683	0.9939
R-95	0.0035	0.9717	0.9917
RS-OW	-0.0006	0.9801	0.9756
R-95 + RS-OW	0.0015	0.9759	0.9832
Combined Singles+2-Fold			
G	0.0088	0.9620	0.9936
R-95 + RS-OW	0.0067	0.9592	0.9844
RS	0.0106	0.9562	0.9948
SS	-0.0029	0.9773	0.975
WD	0.0052	0.9713	0.9938
Brazz.	0.0105	0.9513	0.9948
RS-E	0.0154	0.9226	0.9847
R-95, RS-OW, RS, SS, WD, Brazz. RS-E	0.0069	0.9584	0.9841
Mercerised			
Omez	-0.0001	0.9358	0.9816
Kwfrs.	0.0162	0.9165	0.9869

Table 3

SINGLE JERSEY: PREDICTION OF FIN FR WALES/CM FROM FIN FR AV TEX AND ℓ

Model: $y = a + b/\ell + c\sqrt{\text{av tex}}$

FINISHING	a	b	c	r^2
Singles Yarns				
G	8.974	3.0139	-1.0056	0.985
R-95	9.0926	2.9139	-1.0353	0.9673
RS-OW	9.4207	2.8126	-1.0437	0.9832
R-95 + RS-OW	9.2569	2.8632	-1.0395	0.9748
RS	11.8001	2.8155	-1.6719	0.978
SS	17.3136	1.8180	-2.2046	0.9590
WD	12.6490	2.6052	-1.6682	0.9844
Brazz	11.8478	2.7774	-1.5785	0.9949
RS-E	12.6038	2.4898	-1.5757	0.9886
Omez	13.1189	3.5484	-1.9158	0.9658
Kwfrs.	17.4364	2.2527	-2.4077	0.9837
Two-Fold Yarns				
G	3.4571	3.655	-0.3542	0.9829
R-95	3.7441	3.625	-0.4585	0.9813
RS-OW	6.2094	3.1740	-0.6911	0.9679
R-95 + RS-OW	5.1352	3.3719	-0.5900	0.9733
RS	5.0906	3.3083	-0.5886	0.9771
SS	8.0790	3.1487	-1.1704	0.9839
WD	6.9466	3.3116	-0.9781	0.9942
Brazz	6.4055	3.5228	-0.9940	0.9939
RS-E	8.2622	3.4554	-1.3694	0.9749
Omez	22.0087	2.0362	-2.6149	0.9539
Kwfrs.	11.5899	2.7704	-1.5054	0.9807

Table 4

SINGLE JERSEY: PREDICTION OF FIN FR COURSES/CM FROM FIN FR AV TEX AND L

Model: $y = a + b/L + c\sqrt{av\ tex}$

FINISHING	a	b	c	r^2
Singles Yarns				
G	-6.1662	6.6404	0.7602	0.9723
R-95	-9.5076	6.7548	1.1776	0.9796
RS-OW	-6.3063	6.2076	0.8271	0.9631
R-95 + RS-OW	-7.8898	6.4773	1.0014	0.9690
RS	-11.7535	7.0751	1.5373	0.9655
SS	-3.9364	5.7216	0.7038	0.9829
WD	-11.169	6.9071	1.4201	0.9953
Brazz	-8.5568	6.2761	1.3374	0.9929
RS-E	-12.5600	6.9332	1.6804	0.9831
Omez	-5.3708	4.7406	1.2370	0.9468
Kwfrs.	-7.2	6.1435	1.0265	0.9978
Two-Fold Yarns				
G	-6.8771	6.7100	0.7182	0.9768
R-95	-10.6266	6.7311	1.2904	0.9720
RS-OW	-1.5767	5.2056	0.3641	0.9659
R-95 + RS-OW	-5.5384	5.8705	0.7732	0.9573
RS	-13.1907	6.5072	2.1407	0.9649
SS	-14.5286	7.0124	1.9164	0.9823
WD	-9.5579	6.5175	1.2289	0.9940
Brazz	-10.3499	6.5852	1.3733	0.9991
RS-E	-11.3161	6.7731	1.3640	0.9611
Omez	-12.0389	5.9914	1.4144	0.9935
Kwfrs.	-8.2256	6.0862	1.0828	0.9935

Table 5

SINGLE JERSEY: PREDICTION OF FIN FR STITCH DENSITY FROM FIN FR AV TEX AND ℓ

Model: $y = a + b/\ell^2 + c$ av tex

FINISHING	a	b	c	r^2
Singles Yarns				
G	36.8294	23.4579	-0.7789	0.9876
R-95	13.5902	22.4333	-0.1946	0.9856
RS-OW	36.9890	20.9026	-0.6704	0.9831
R-95 + RS-OW	25.2567	21.668	-0.4306	0.9834
RS	16.5364	22.99	-0.7327	0.9815
SS	127.3915	17.1259	-3.5415	0.9873
WD	23.8038	22.0529	-0.7934	0.9942
Brazz	45.7386	21.0897	-1.1275	0.997
RS-E	23.6313	21.2857	-0.4959	0.9943
Omez	58.2653	20.1803	-1.052	0.9959
Kwfrs.	107.3609	19.2935	-3.4105	0.9969
Two-Fold Yarns				
G	-11.5955	24.1941	0.2643	0.9923
R-95	-30.6595	23.0969	0.794	0.9859
RS-OW	38.7566	19.1220	-0.632	0.9799
R-95 + RS-OW	7.7893	20.8973	0.0094	0.9778
RS	-40.8712	21.8906	2.0402	0.9807
SS	-16.7876	21.5213	0.5007	0.9871
WD	-11.1679	22.3888	0.1556	0.9943
Brazz	-17.3604	23.0011	0.2333	0.9986
RS-E	-10.1114	23.121	-0.4797	0.9932
Omez	58.2308	19.4623	-1.5477	0.9860
Kwfrs.	39.8560	19.9484	-1.1671	0.9900

Table 6

SINGLE JERSEY: PREDICTION OF FIN FR WEIGHT FROM FIN FR AV TEX AND L

Model: y = a + b av tex/L

FINISHING	a	b	r^2
Singles Yarn			
G	13.7165	2.2419	0.9823
R-95	-4.4738	2.3583	0.9850
RS-OW	4.7942	2.1936	0.9788
R95 + RS-OW	0.1245	2.2767	0.9801
RS	7.4419	2.2051	0.9872
SS	33.0170	1.6751	0.8844
WD	12.0032	2.0816	0.9755
Brazz	3.8245	2.2112	0.9937
RS-E	8.2734	2.1220	0.9871
Omez	9.2888	2.2193	0.9505
Kwfrs.	30.2761	1.8166	0.94
Two-Fold Yarns			
G	-5.9392	2.3452	0.9887
R-95	-15.7812	2.3582	0.9847
RS-OW	4.6518	2.0316	0.9524
R-95 + RS-OW	-4.9844	2.1865	0.9634
RS	-7.6005	2.2723	0.9673
SS	-3.6201	2.1031	0.9688
WD	3.5668	2.1003	0.9746
Brazz	-5.586	2.1883	0.9724
RS-E	5.2570	2.0429	0.9683
Omez	11.0184	2.0166	0.9809
Kwfrs.	9.1421	2.0	0.9675

Table 7

SPIRALITY TRIAL S + Z YARNS

Tex $y = a + bx$

	a	b	r^2
G	-0.8808	1.0079	0.9999
RS-OW	-0.721	0.9859	0.9998

Stitch Length $y = a + bx$

	a	b	r^2
G	0.0157	0.9382	0.9939
RS-OW	0.015	0.9347	0.9818

Courses $y = a + b/\ell + c\sqrt{tex}$

	a	b	c	r^2
G	14.531	5.0538	-2.037	0.9932
RS-OW	7.7233	4.6659	-0.8575	0.9359

Wales $y = a + b/\ell + c\sqrt{tex}$

	a	b	c	r^2
G	-0.3103	3.6843	0.1891	0.9894
RS-OW	-0.9137	4.1312	-0.0079	0.9844

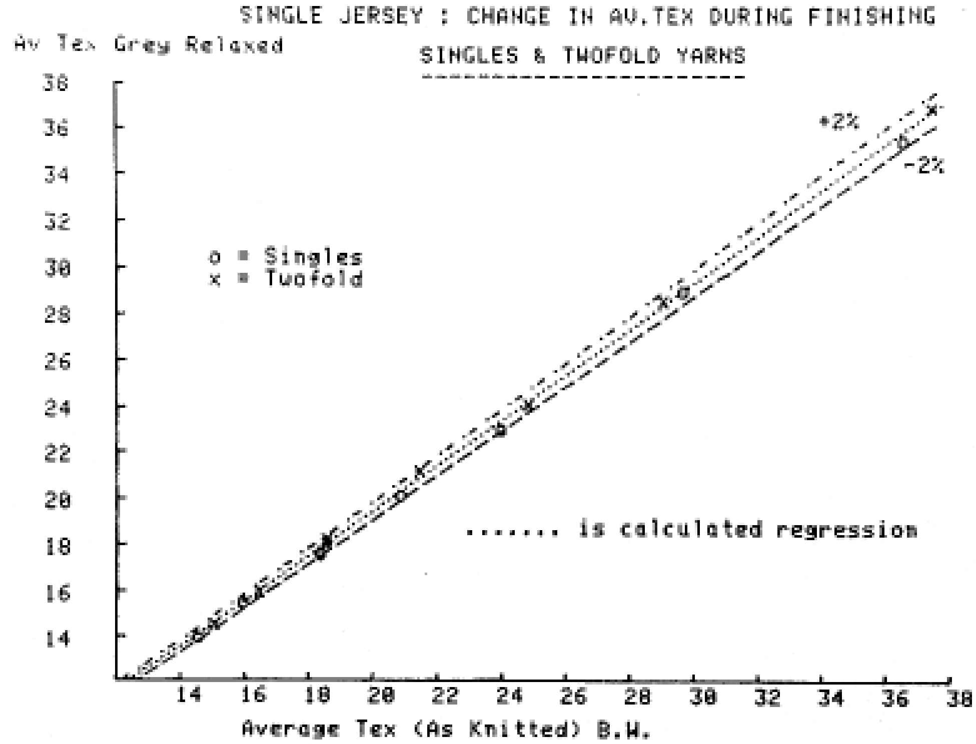
Stitch Density $y = a + b/\ell^2 + c\ tex$

	a	b	c	r^2
G	74.8317	22.6748	-2.0074	0.9950
RS-OW	41.0570	20.9241	-1.1941	0.9832

Weight $y = a + b\ tex/\ell$

	a	b	r^2
G	33.0938	2.0008	0.9765
RS-OW	9.8397	2.0501	0.9519

Figure 1


SINGLE JERSEY : CHANGE IN AV.TEX DURING FINISHING
Av Tex Grey Relaxed
SINGLES & TWOFOLD YARNS
38
36
34
32
30
28
26
24
22
20
18
16
14
+2%
-2%
o = Singles
x = Twofold
.... is calculated regression
14 16 18 20 22 24 26 28 30 32 34 36 38
Average Tex (As Knitted) B.W.

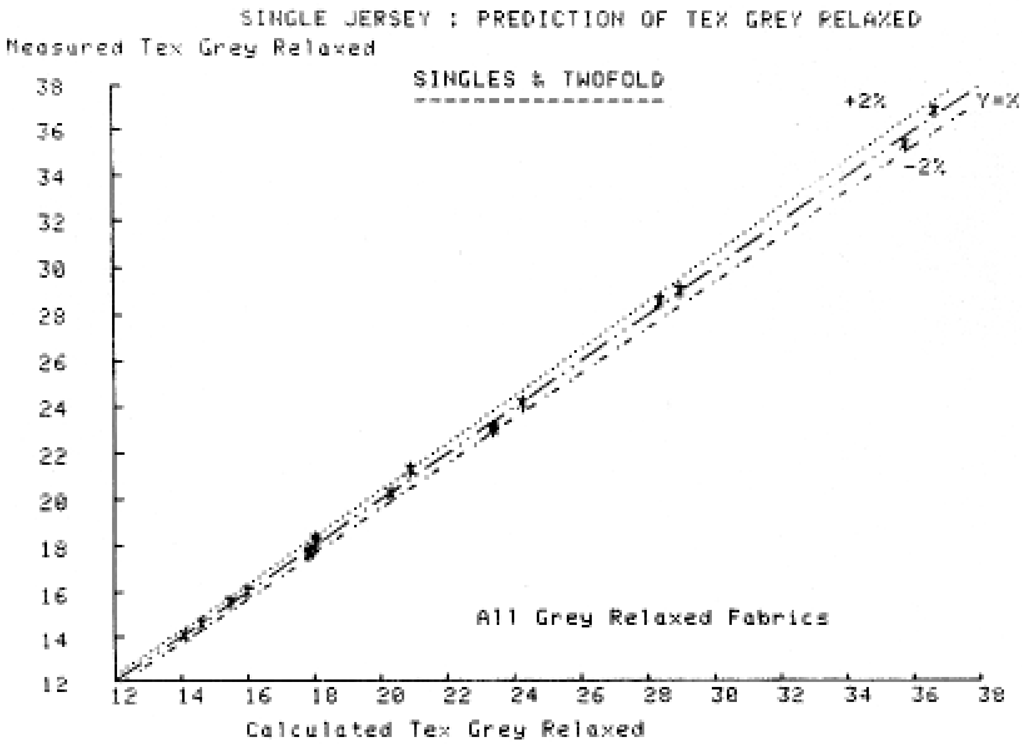
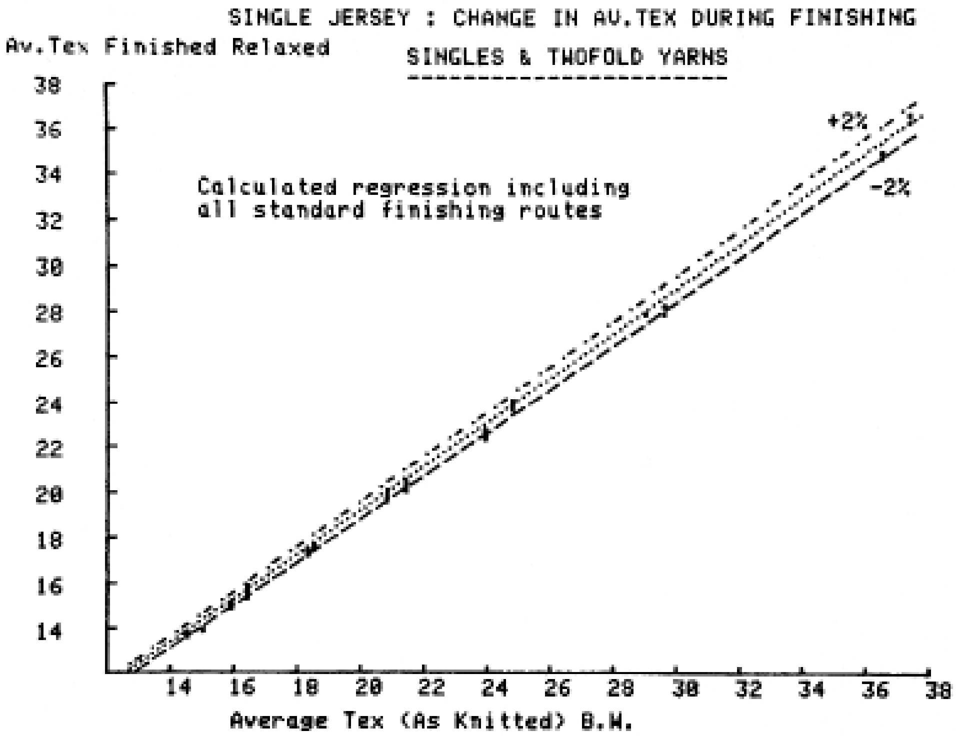

SINGLE JERSEY : PREDICTION OF TEX GREY RELAXED
Measured Tex Grey Relaxed
SINGLES & TWOFOLD
38
36
34
32
30
28
26
24
22
20
18
16
14
12
+2%
Y=X
-2%
All Grey Relaxed Fabrics
12 14 16 18 20 22 24 26 28 30 32 34 36 38
Calculated Tex Grey Relaxed

Figure 2


SINGLE JERSEY : CHANGE IN AV.TEX DURING FINISHING
Av.Tex Finished Relaxed
SINGLES & TWOFOLD YARNS
Calculated regression including
all standard finishing routes
+2%
-2%
38
36
34
32
30
28
26
24
22
20
18
16
14
14 16 18 20 22 24 26 28 30 32 34 36 38
Average Tex (As Knitted) B.W.

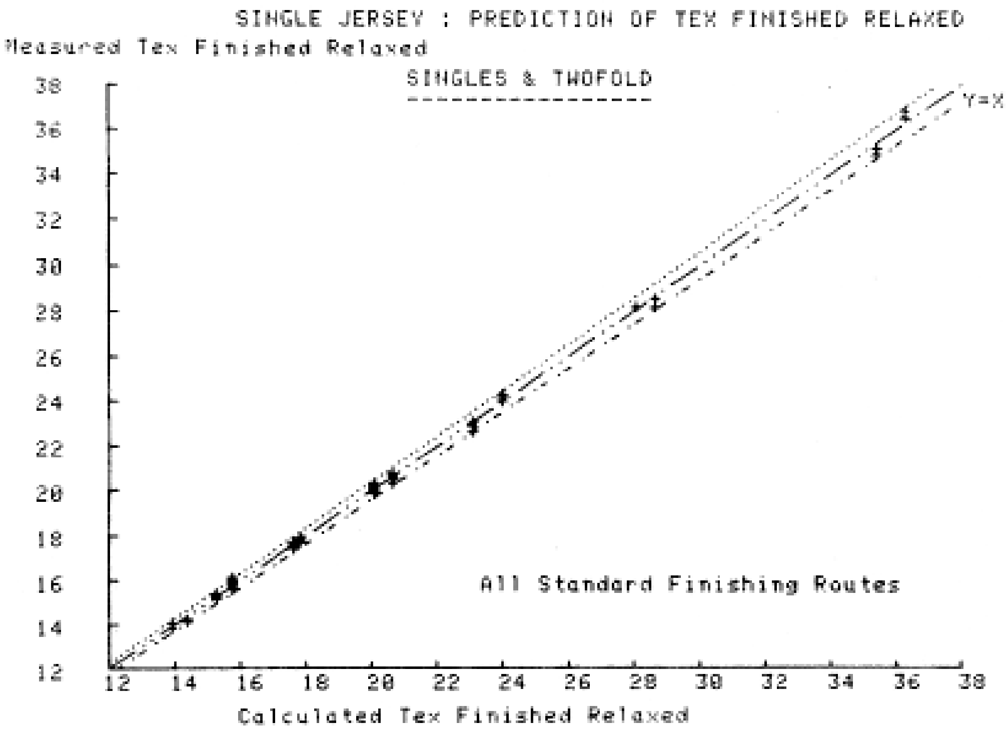
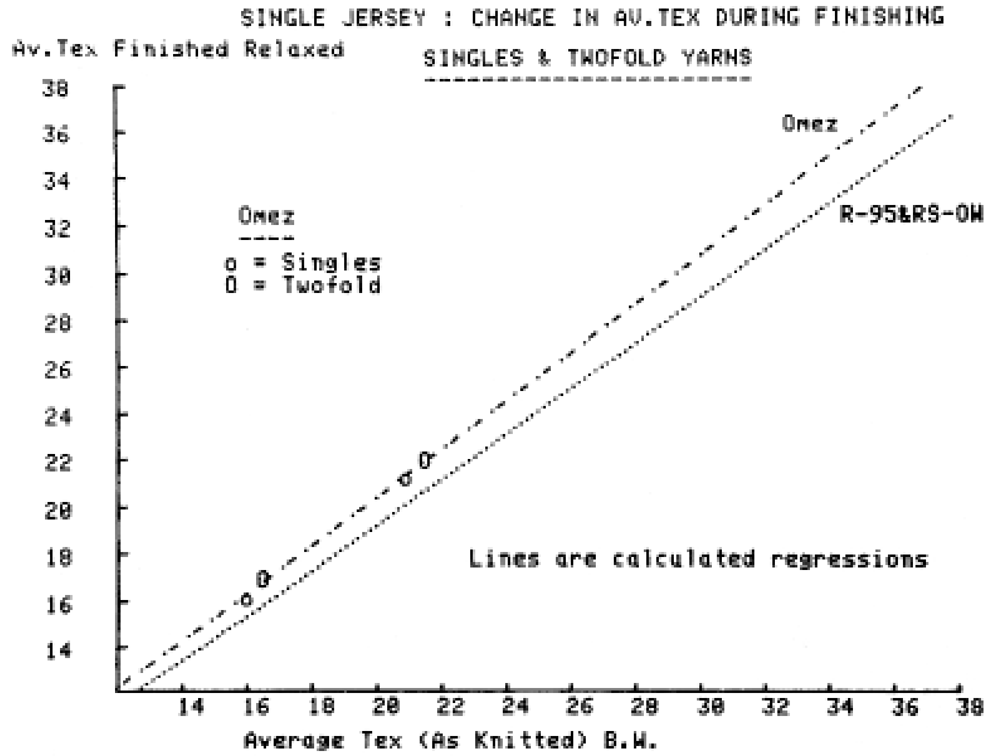

SINGLE JERSEY : PREDICTION OF TEX FINISHED RELAXED
Measured Tex Finished Relaxed
SINGLES & TWOFOLD
Y=X
All Standard Finishing Routes
38
36
34
32
30
28
26
24
22
20
18
16
14
12
12 14 16 18 20 22 24 26 28 30 32 34 36 38
Calculated Tex Finished Relaxed

Figure 3


SINGLE JERSEY : CHANGE IN AV.TEX DURING FINISHING
Av.Tex Finished Relaxed
SINGLES & TWOFOLD YARNS
Omez
R-95&RS-OW
Omez
o = Singles
O = Twofold
Lines are calculated regressions
Average Tex (As Knitted) B.W.

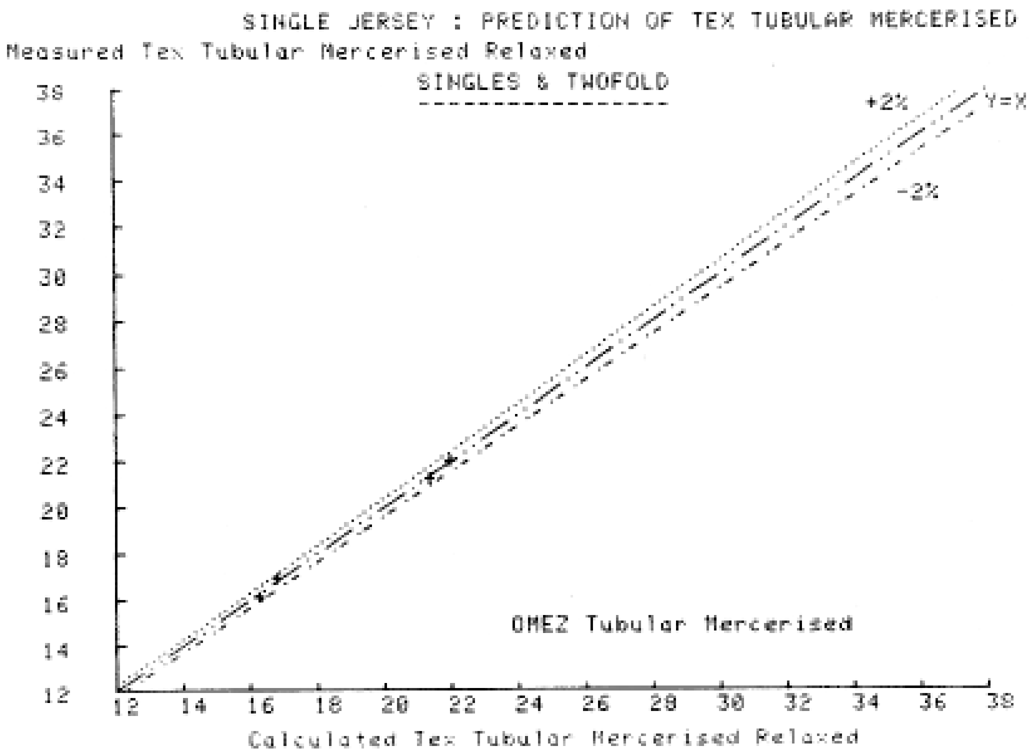
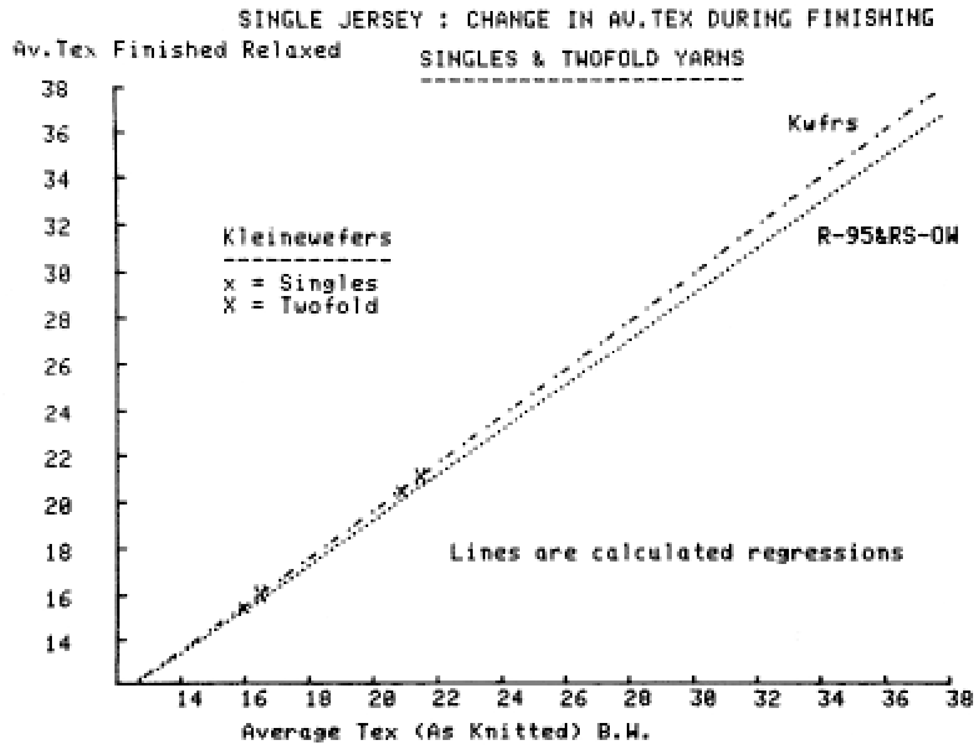

SINGLE JERSEY : PREDICTION OF TEX TUBULAR MERCERISED
Measured Tex Tubular Mercerised Relaxed
SINGLES & TWOFOLD
+2%
Y=X
-2%
OMEZ Tubular Mercerised
Calculated Tex Tubular Mercerised Relaxed

Figure 4


SINGLE JERSEY : CHANGE IN AV.TEX DURING FINISHING
Av.Tex Finished Relaxed
SINGLES & TWOFOLD YARNS
Kwfrs
R-95&RS-OW
Kleinewefers
x = Singles
X = Twofold
Lines are calculated regressions
38 36 34 32 30 28 26 24 22 20 18 16 14
14 16 18 20 22 24 26 28 30 32 34 36 38
Average Tex (As Knitted) B.W.

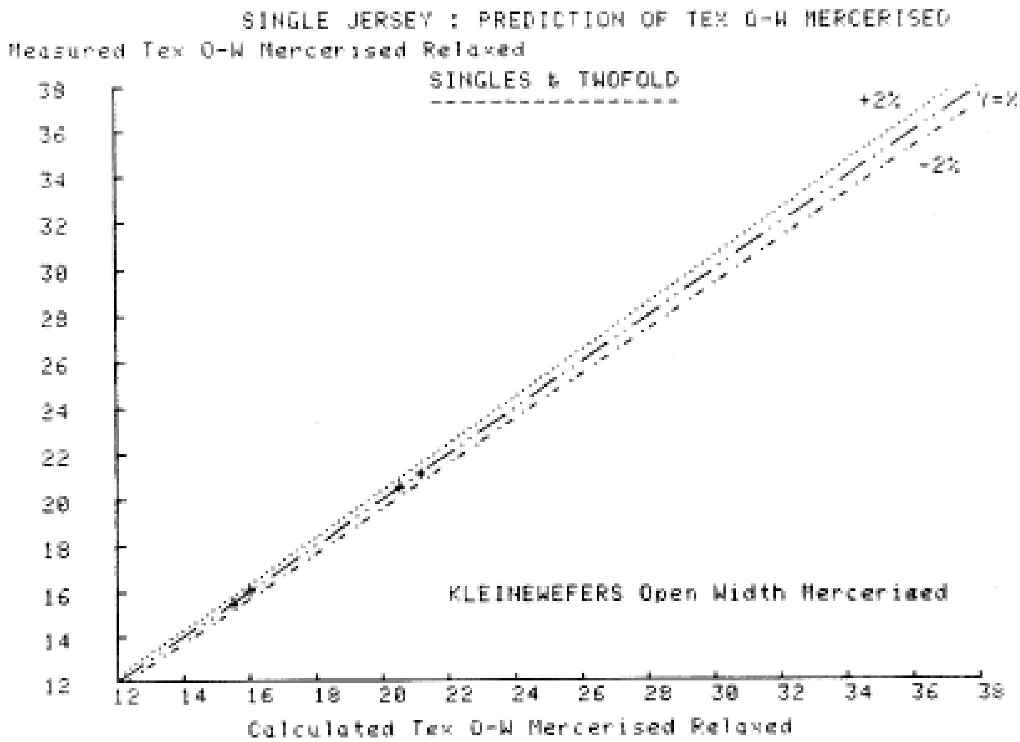

SINGLE JERSEY : PREDICTION OF TEX O-W MERCERISED
Measured Tex O-W Mercerised Relaxed
SINGLES & TWOFOLD
+2%
Y=X
-2%
KLEINEWEFERS Open Width Mercerised
38 36 34 32 30 28 26 24 22 20 18 16 14 12
12 14 16 18 20 22 24 26 28 30 32 34 36 38
Calculated Tex O-W Mercerised Relaxed

Figure 5

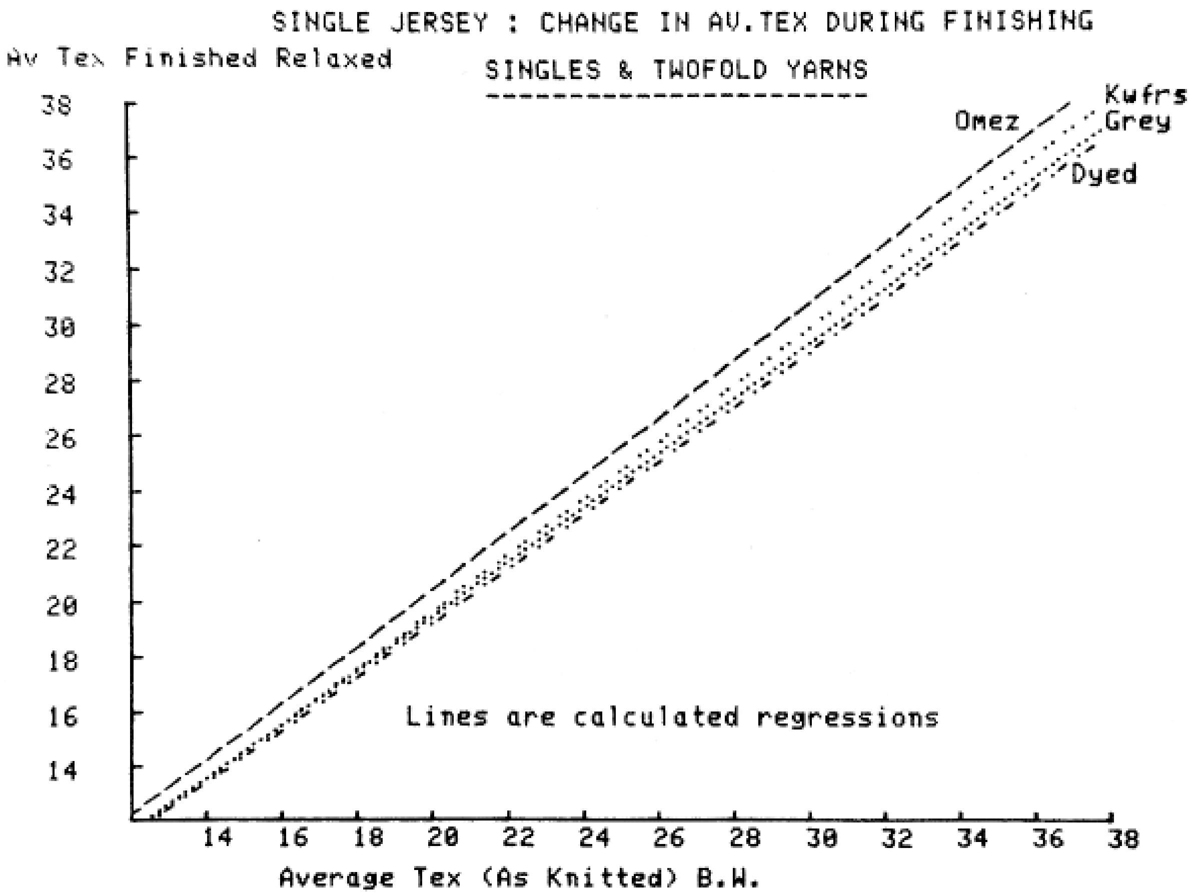
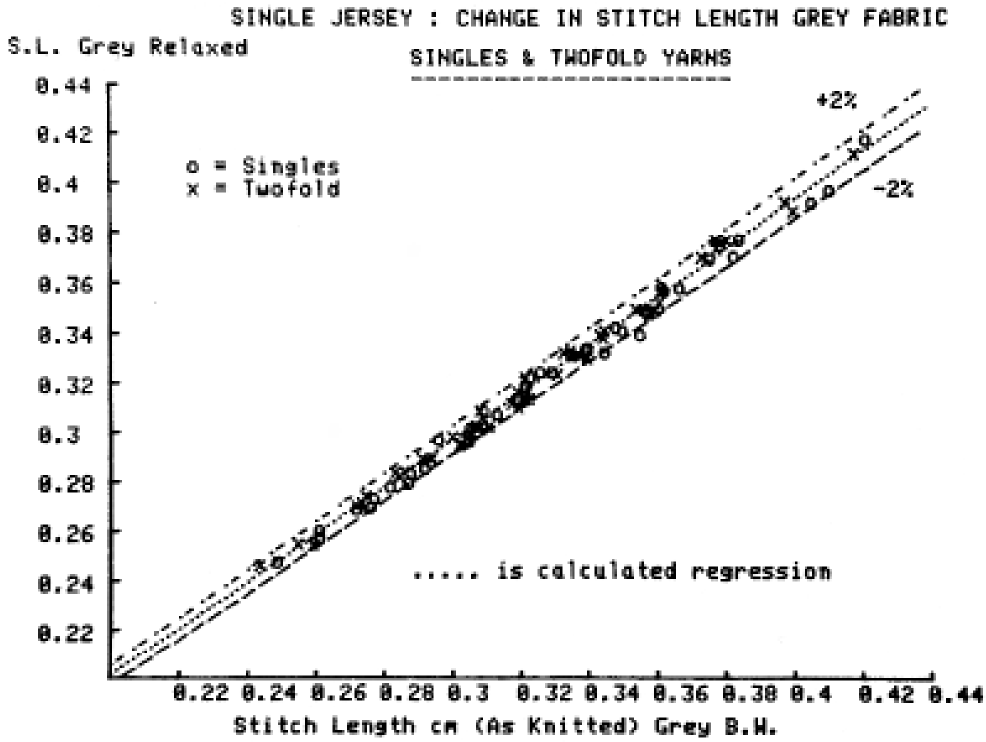

SINGLE JERSEY : CHANGE IN AV.TEX DURING FINISHING
SINGLES & TWOFOLD YARNS
Av Tex Finished Relaxed
38
36
34
32
30
28
26
24
22
20
18
16
14
Omez
Kwfrs
Grey
Dyed
Lines are calculated regressions
14
16
18
20
22
24
26
28
30
32
34
36
38
Average Tex (As Knitted) B.W.

Figure 6


SINGLE JERSEY : CHANGE IN STITCH LENGTH GREY FABRIC
S.L. Grey Relaxed
SINGLES & TWOFOLD YARNS
o = Singles
x = Twofold
+2%
-2%
..... is calculated regression
0.44
0.42
0.4
0.38
0.36
0.34
0.32
0.3
0.28
0.26
0.24
0.22
0.22 0.24 0.26 0.28 0.3 0.32 0.34 0.36 0.38 0.4 0.42 0.44
Stitch Length cm (As Knitted) Grey B.W.

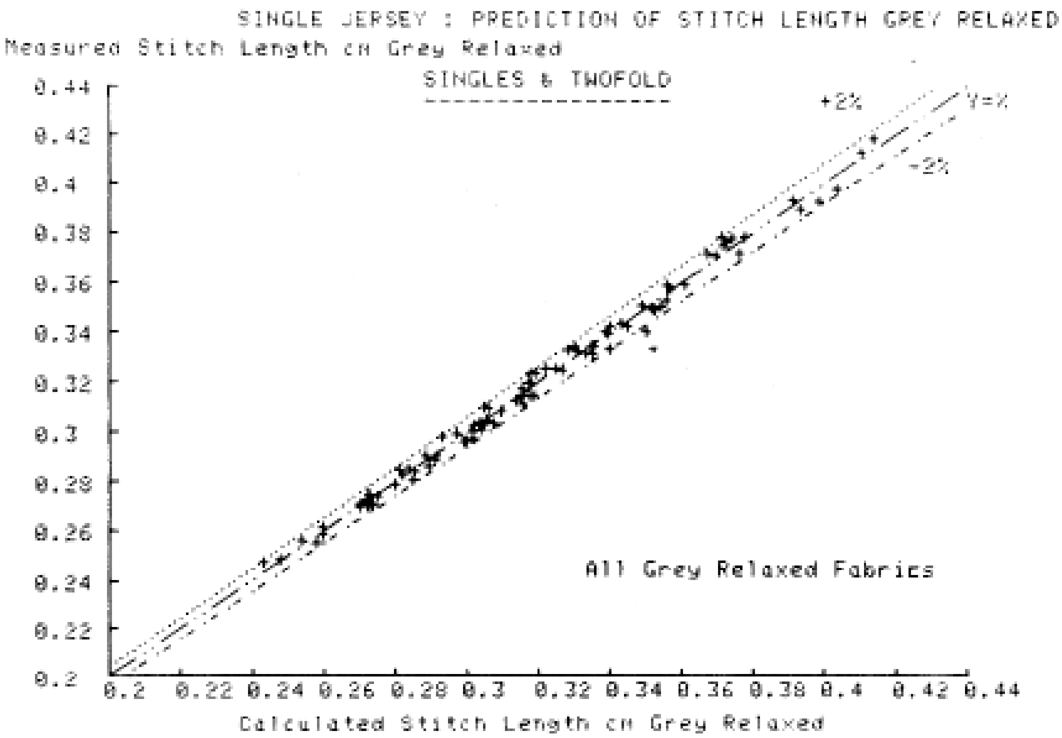
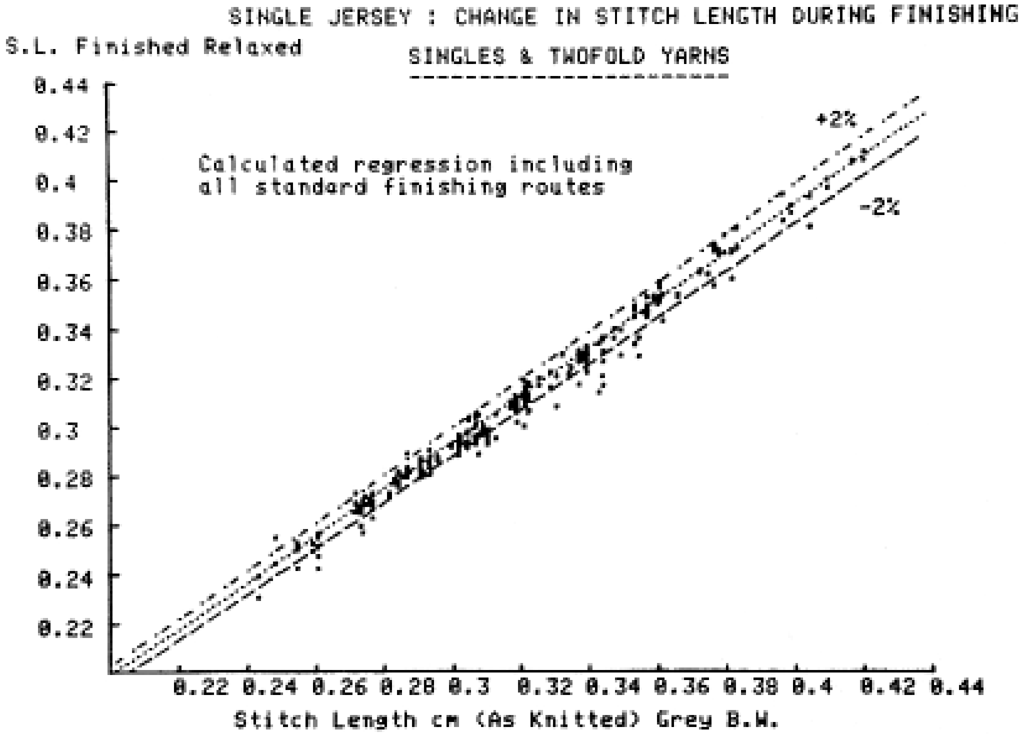

SINGLE JERSEY : PREDICTION OF STITCH LENGTH GREY RELAXED
Measured Stitch Length cm Grey Relaxed
SINGLES & TWOFOLD
+2%
Y=X
-2%
All Grey Relaxed Fabrics
0.44
0.42
0.4
0.38
0.36
0.34
0.32
0.3
0.28
0.26
0.24
0.22
0.2
0.2 0.22 0.24 0.26 0.28 0.3 0.32 0.34 0.36 0.38 0.4 0.42 0.44
Calculated Stitch Length cm Grey Relaxed

Figure 7


SINGLE JERSEY : CHANGE IN STITCH LENGTH DURING FINISHING
S.L. Finished Relaxed
SINGLES & TWOFOLD YARNS
0.44
0.42
0.4
0.38
0.36
0.34
0.32
0.3
0.28
0.26
0.24
0.22
Calculated regression including all standard finishing routes
+2%
-2%
0.22 0.24 0.26 0.28 0.3 0.32 0.34 0.36 0.38 0.4 0.42 0.44
Stitch Length cm (As Knitted) Grey B.W.

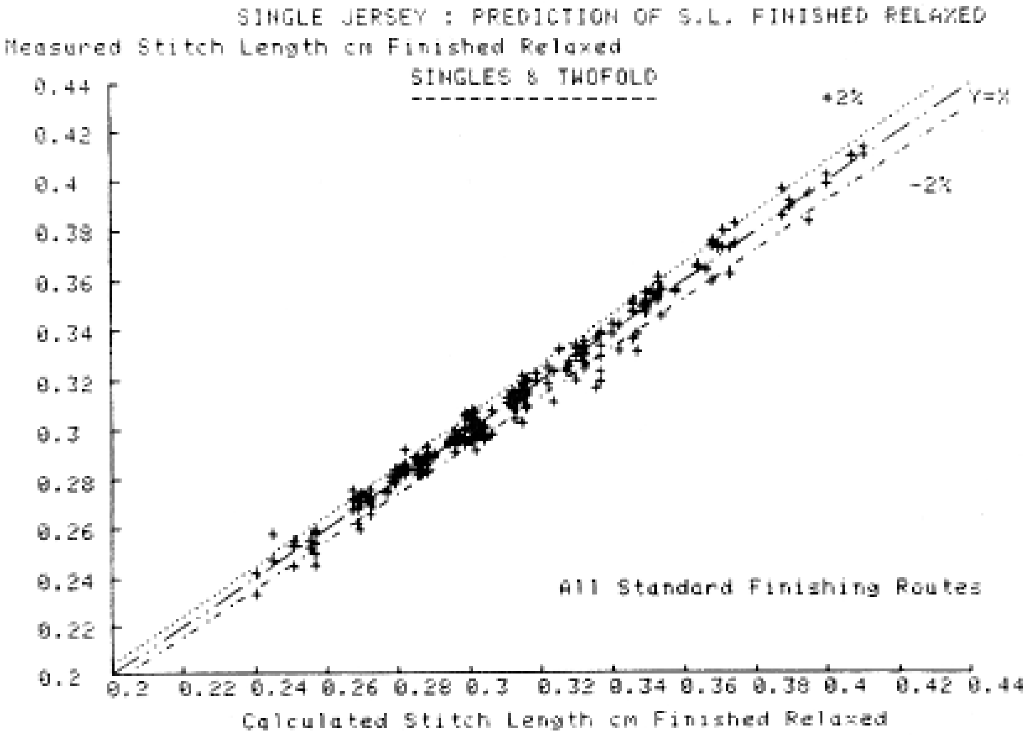
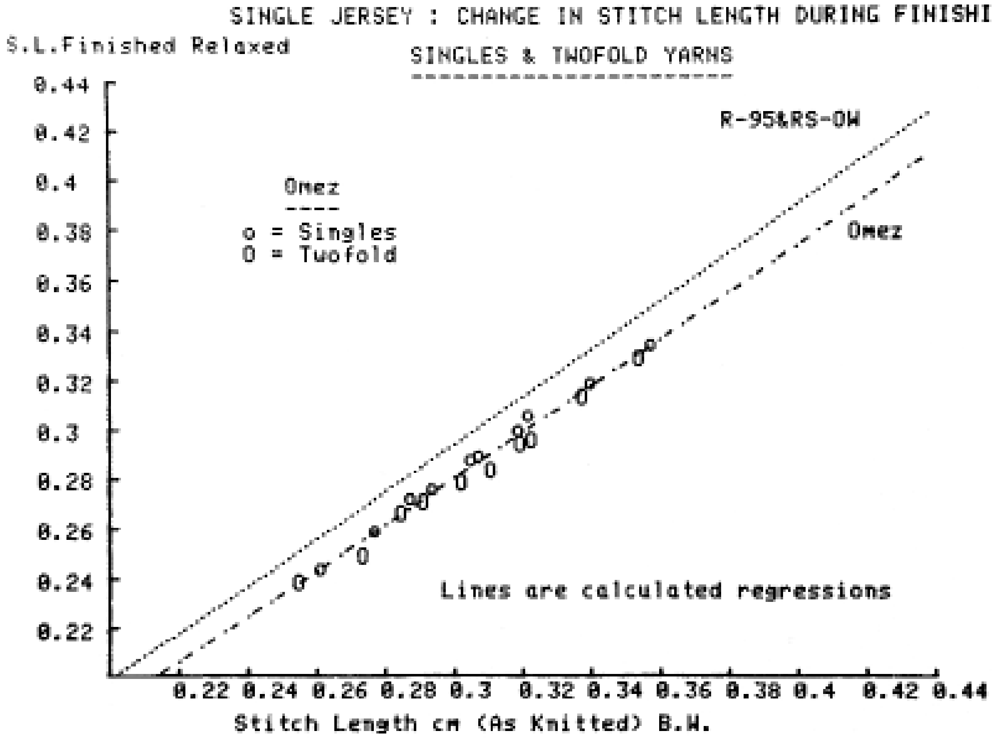
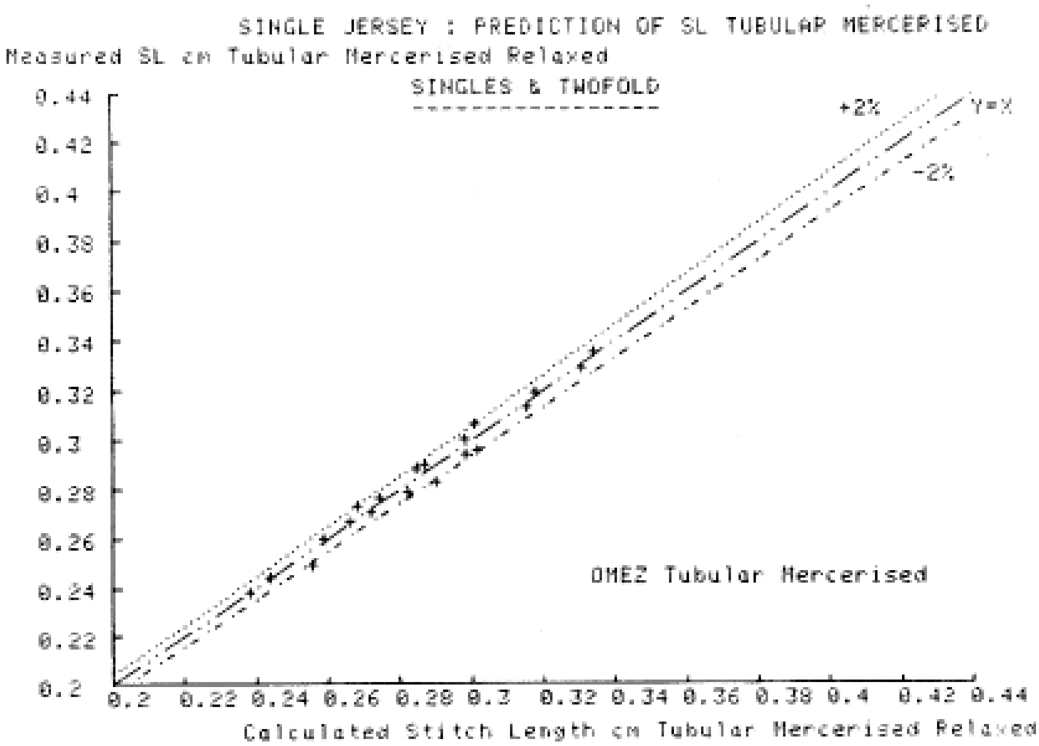

SINGLE JERSEY : PREDICTION OF S.L. FINISHED RELAXED
Measured Stitch Length cm Finished Relaxed
SINGLES & TWOFOLD
0.44
0.42
0.4
0.38
0.36
0.34
0.32
0.3
0.28
0.26
0.24
0.22
0.2
+2%
Y=X
-2%
All Standard Finishing Routes
0.2 0.22 0.24 0.26 0.28 0.3 0.32 0.34 0.36 0.38 0.4 0.42 0.44
Calculated Stitch Length cm Finished Relaxed

Figure 8

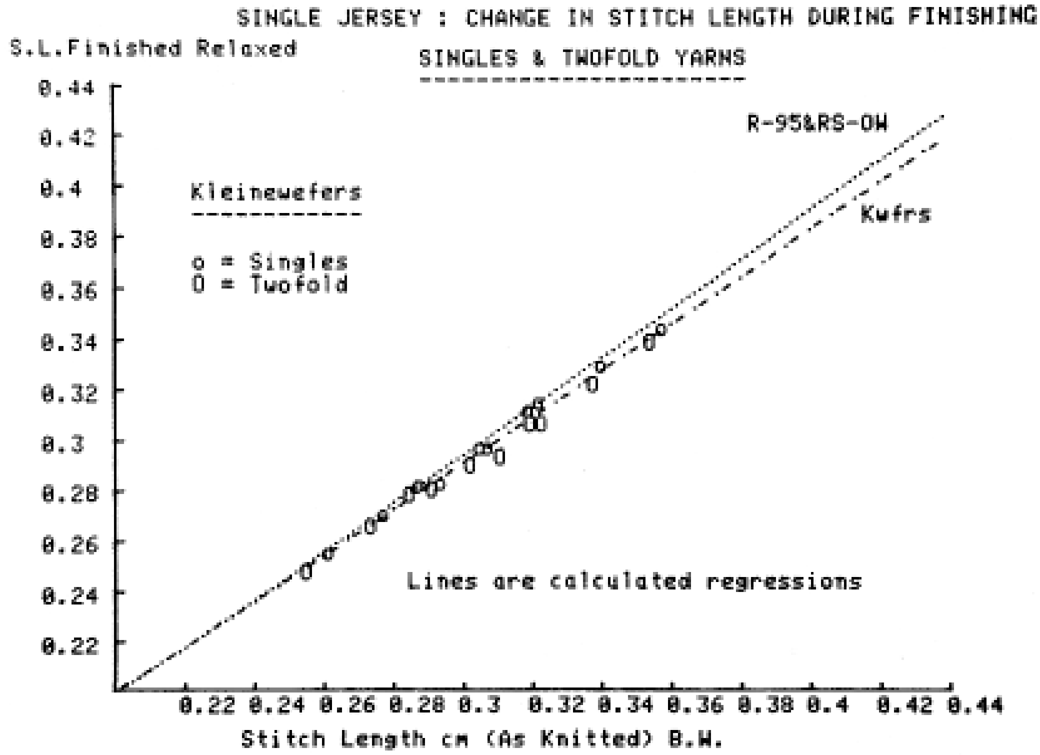


SINGLE JERSEY : CHANGE IN STITCH LENGTH DURING FINISHING
S.L.Finished Relaxed
SINGLES & TWOFOLD YARNS
R-95&RS-OW
Omez
o = Singles
O = Twofold
Omez
Lines are calculated regressions
0.22 0.24 0.26 0.28 0.3 0.32 0.34 0.36 0.38 0.4 0.42 0.44
Stitch Length cm (As Knitted) B.W.



SINGLE JERSEY : PREDICTION OF SL TUBULAR MERCERISED
Measured SL cm Tubular Mercerised Relaxed
SINGLES & TWOFOLD
+2%
Y=X
-2%
OMEZ Tubular Mercerised
0.2 0.22 0.24 0.26 0.28 0.3 0.32 0.34 0.36 0.38 0.4 0.42 0.44
Calculated Stitch Length cm Tubular Mercerised Relaxed

Figure 9


SINGLE JERSEY : CHANGE IN STITCH LENGTH DURING FINISHING
S.L.Finished Relaxed
SINGLES & TWOFOLD YARNS
R-95&RS-OW
Kleinewefers
o = Singles
O = Twofold
Kwfrs
Lines are calculated regressions
Stitch Length cm (As Knitted) B.W.

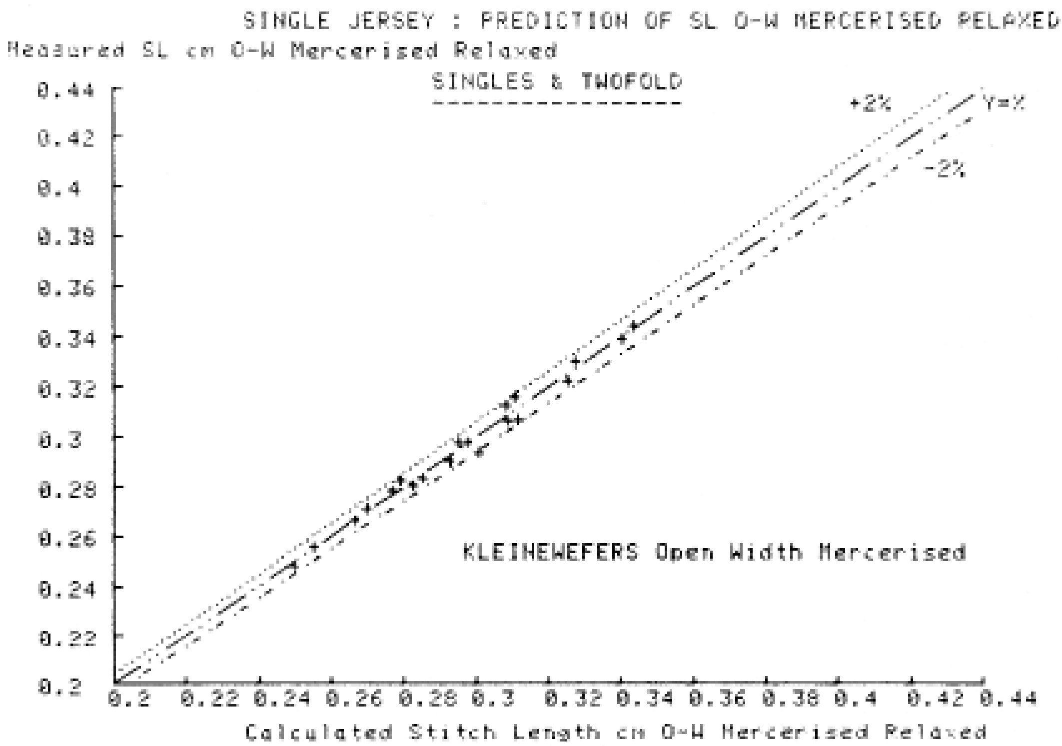

SINGLE JERSEY : PREDICTION OF SL O-W MERCERISED RELAXED
Measured SL cm O-W Mercerised Relaxed
SINGLES & TWOFOLD
+2%
Y=X
-2%
KLEINEWEFERS Open Width Mercerised
Calculated Stitch Length cm O-W Mercerised Relaxed

Figure 10

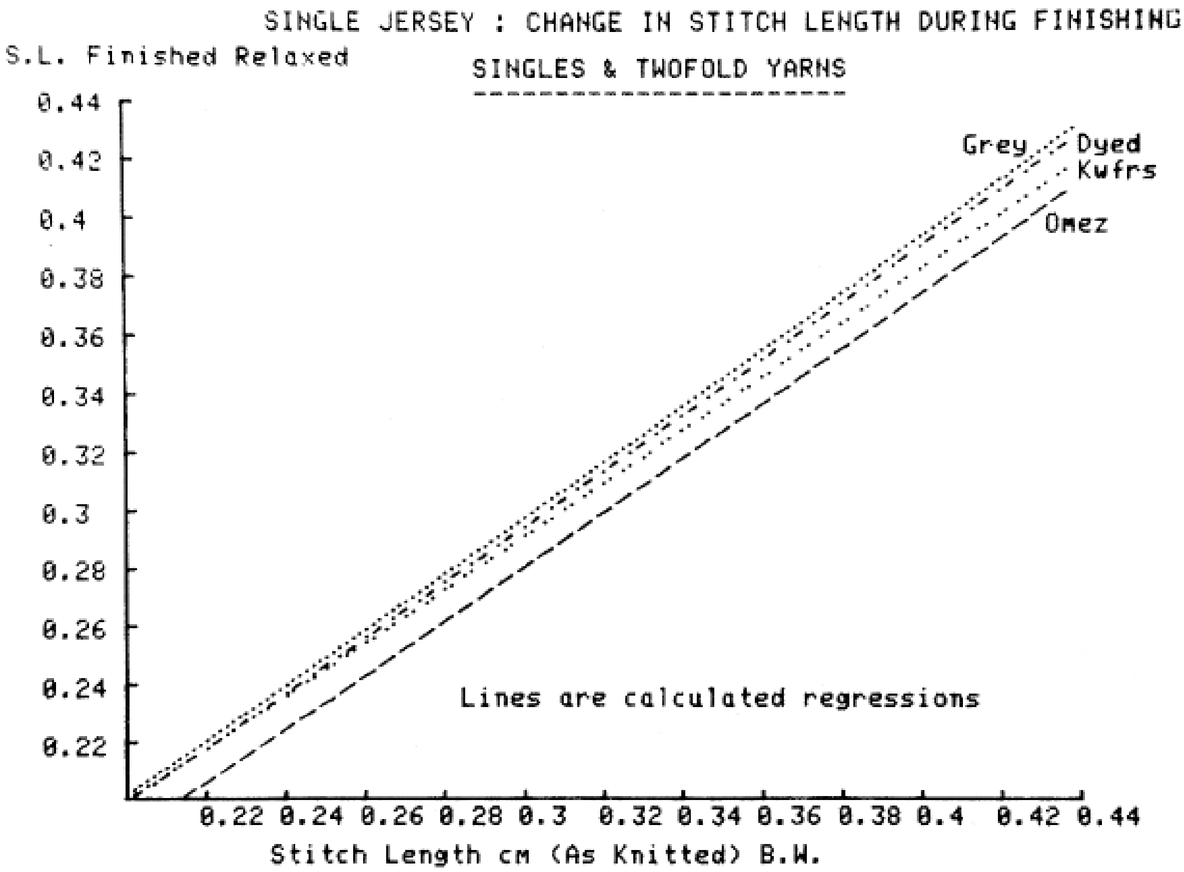
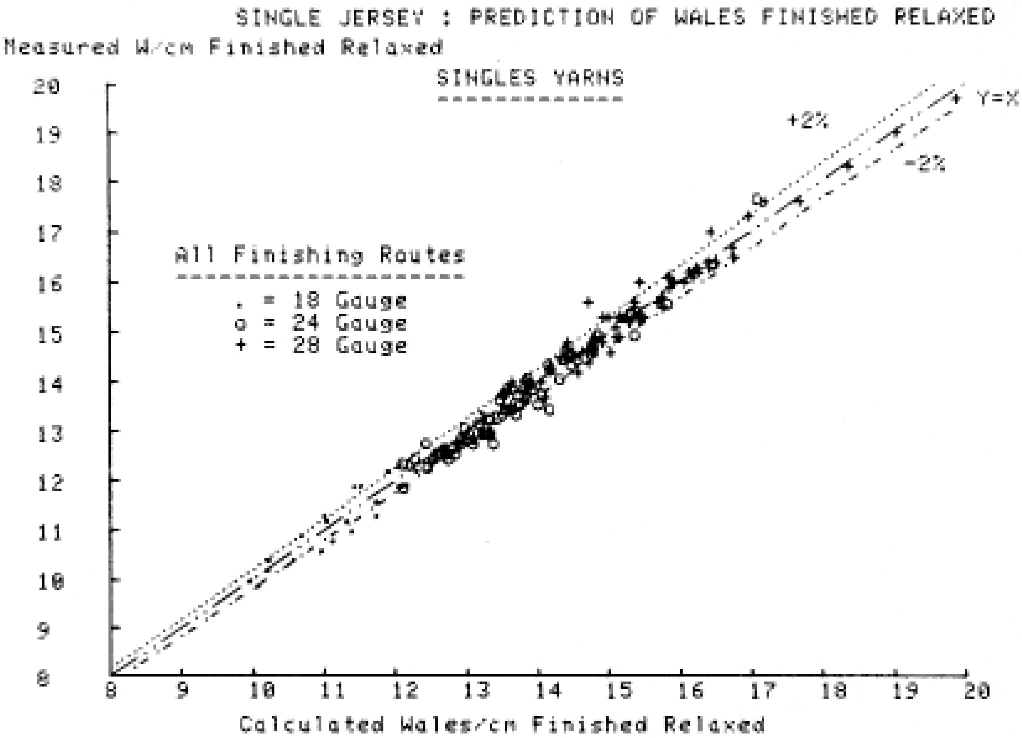
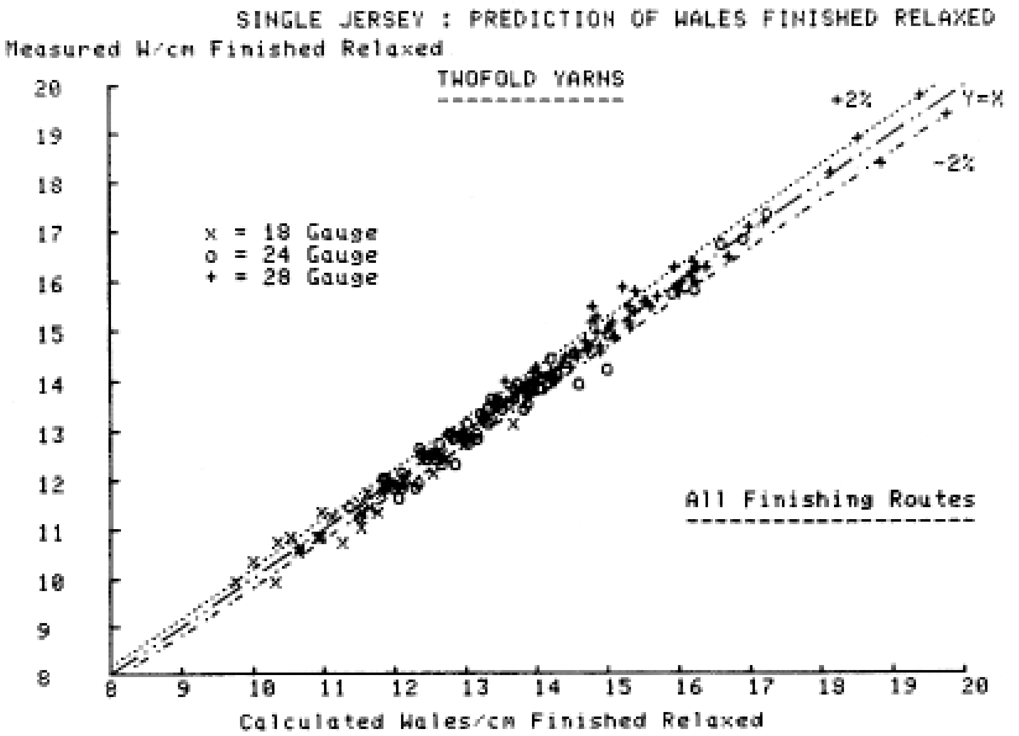

SINGLE JERSEY : CHANGE IN STITCH LENGTH DURING FINISHING
S.L. Finished Relaxed
SINGLES & TWOFOLD YARNS
0.44
0.42
0.4
0.38
0.36
0.34
0.32
0.3
0.28
0.26
0.24
0.22
Grey
Dyed
Kwfrs
Omez
Lines are calculated regressions
0.22 0.24 0.26 0.28 0.3 0.32 0.34 0.36 0.38 0.4 0.42 0.44
Stitch Length cm (As Knitted) B.W.

Figure 11

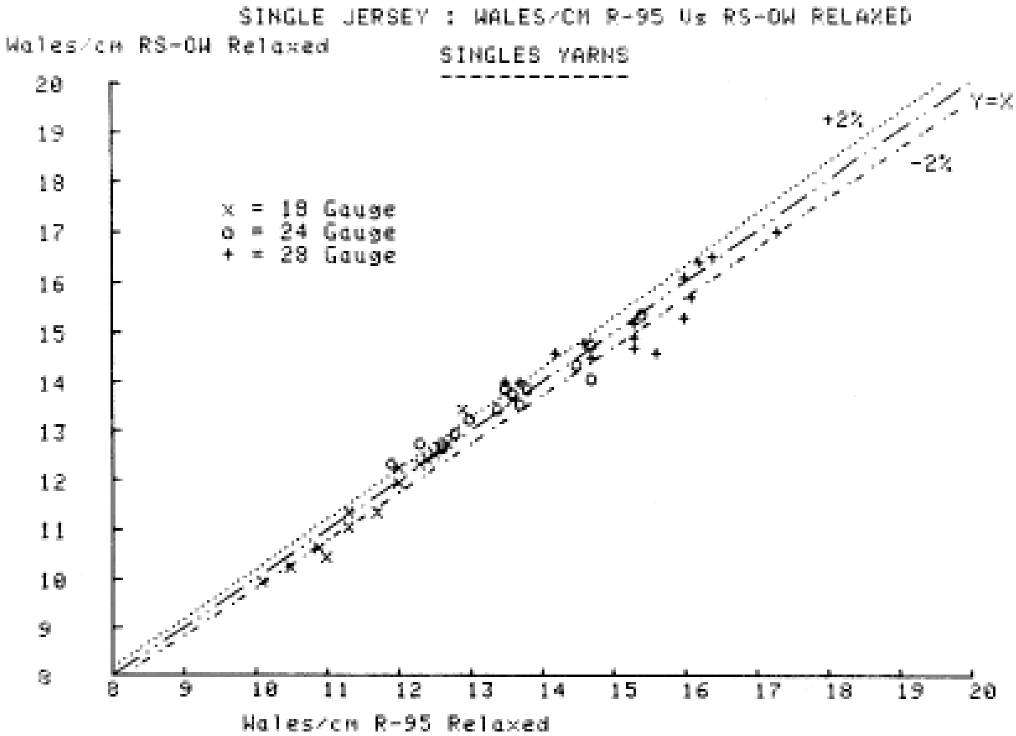


SINGLE JERSEY : PREDICTION OF WALES FINISHED RELAXED
Measured W/cm Finished Relaxed
SINGLES YARNS
All Finishing Routes
. = 18 Gauge
o = 24 Gauge
+ = 28 Gauge
+2%
-2%
Y=X
Calculated Wales/cm Finished Relaxed



SINGLE JERSEY : PREDICTION OF WALES FINISHED RELAXED
Measured W/cm Finished Relaxed
TWOFOLD YARNS
x = 18 Gauge
o = 24 Gauge
+ = 28 Gauge
+2%
-2%
Y=X
All Finishing Routes
Calculated Wales/cm Finished Relaxed

Figure 12


SINGLE JERSEY : WALES/CM R-95 Vs RS-OW RELAXED
SINGLES YARNS
Wales/cm RS-OW Relaxed
Wales/cm R-95 Relaxed
x = 18 Gauge
o = 24 Gauge
+ = 28 Gauge
+2%
-2%
Y=X
8
9
10
11
12
13
14
15
16
17
18
19
20

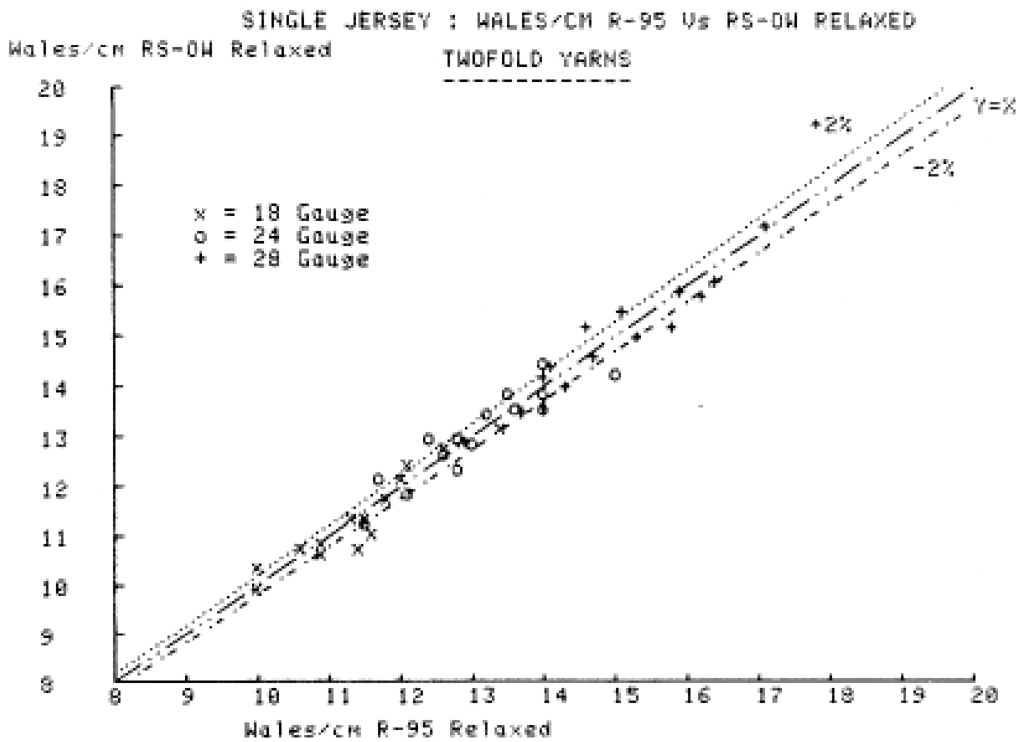
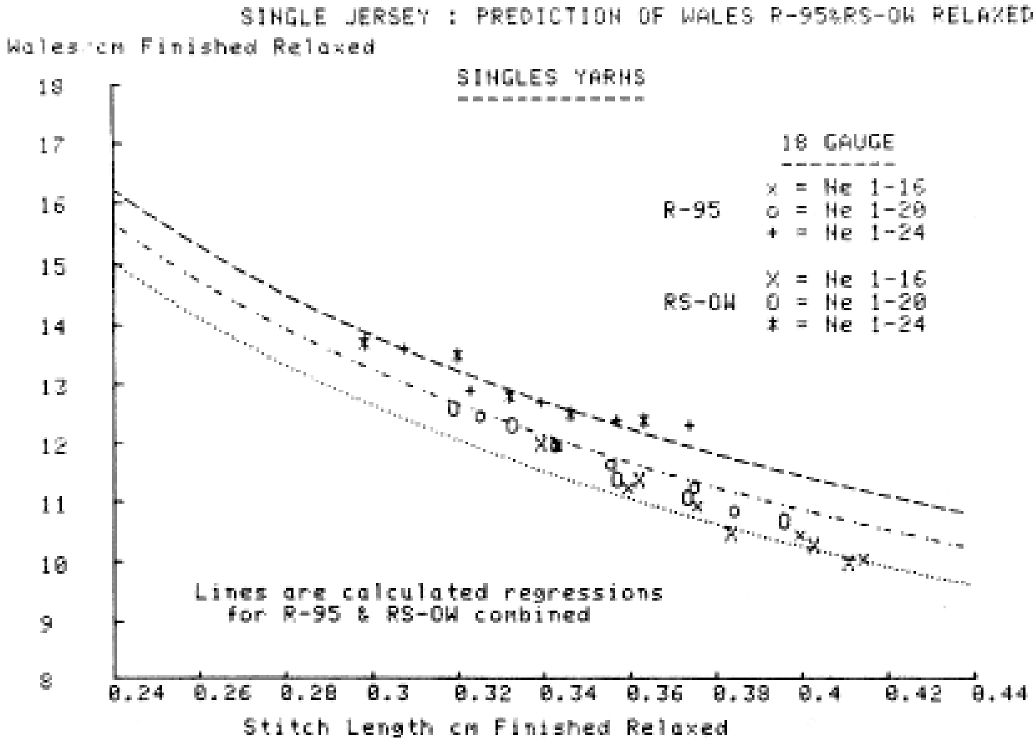

SINGLE JERSEY : WALES/CM R-95 Vs RS-OW RELAXED
TWOFOLD YARNS
Wales/cm RS-OW Relaxed
Wales/cm R-95 Relaxed
x = 18 Gauge
o = 24 Gauge
+ = 28 Gauge
+2%
-2%
Y=X
8
9
10
11
12
13
14
15
16
17
18
19
20

Figure 13


SINGLE JERSEY : PREDICTION OF WALES R-95&RS-OW RELAXED
Wales/cm Finished Relaxed
SINGLES YARNS
18 GAUGE
R-95
x = Ne 1-16
o = Ne 1-20
+ = Ne 1-24
RS-OW
X = Ne 1-16
O = Ne 1-20
‡ = Ne 1-24
Lines are calculated regressions
for R-95 & RS-OW combined
18
17
16
15
14
13
12
11
10
9
8
0.24
0.26
0.28
0.3
0.32
0.34
0.36
0.38
0.4
0.42
0.44
Stitch Length cm Finished Relaxed

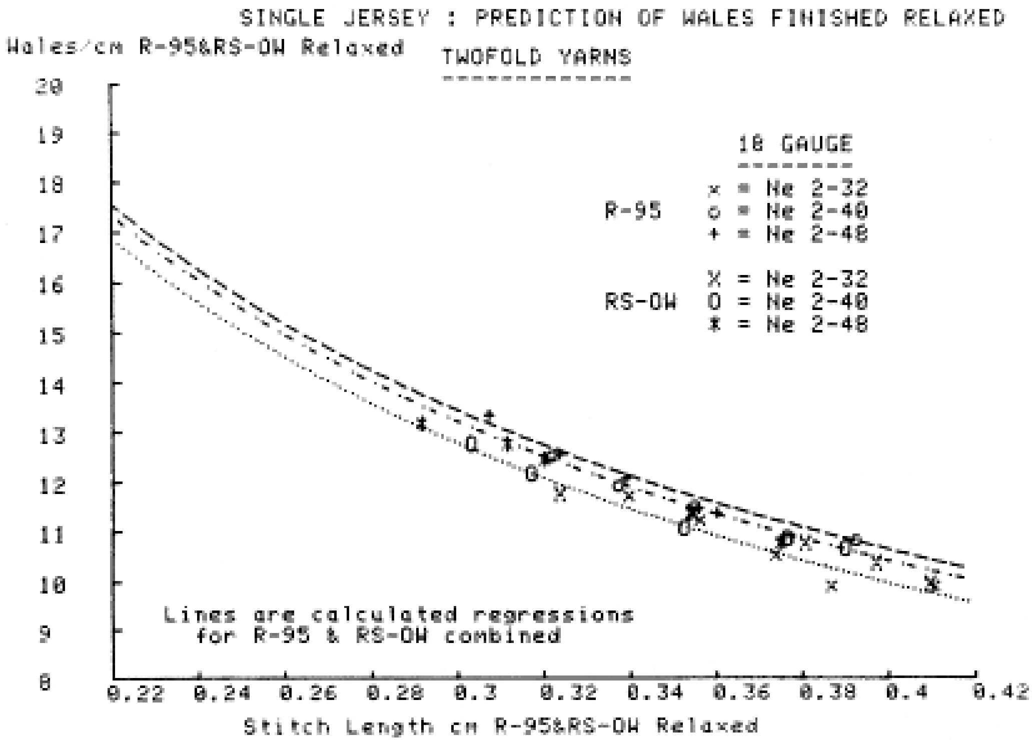
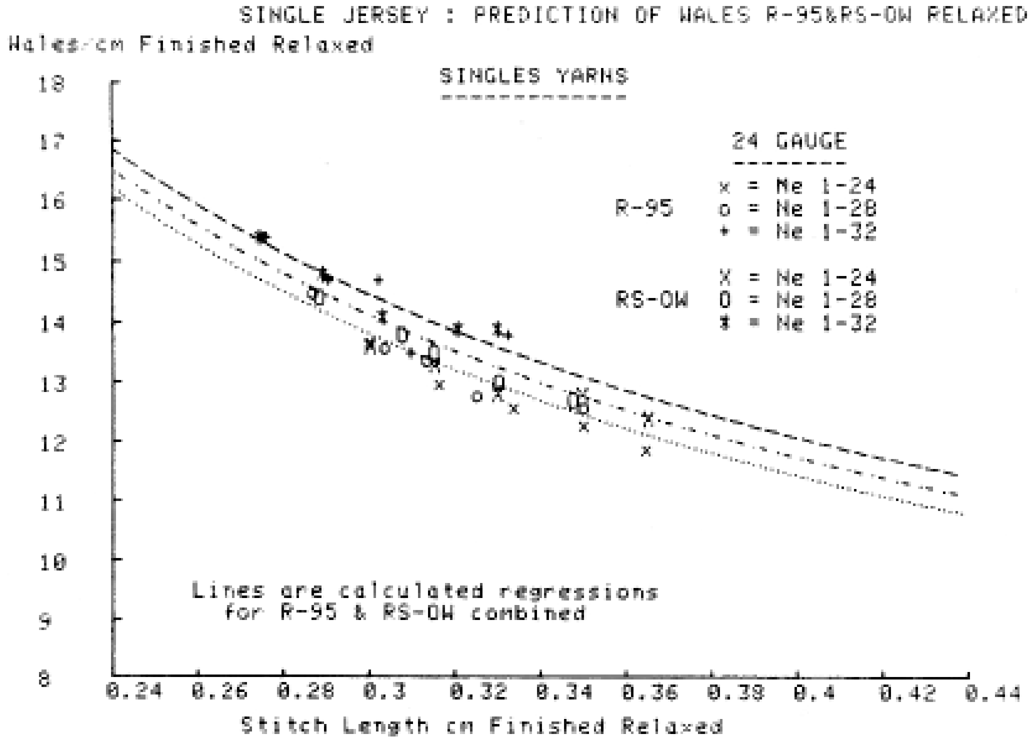

SINGLE JERSEY : PREDICTION OF WALES FINISHED RELAXED
Wales/cm R-95&RS-OW Relaxed
TWOFOLD YARNS
18 GAUGE
R-95
x = Ne 2-32
o = Ne 2-40
+ = Ne 2-48
RS-OW
X = Ne 2-32
O = Ne 2-40
‡ = Ne 2-48
Lines are calculated regressions
for R-95 & RS-OW combined
20
19
18
17
16
15
14
13
12
11
10
9
8
0.22
0.24
0.26
0.28
0.3
0.32
0.34
0.36
0.38
0.4
0.42
Stitch Length cm R-95&RS-OW Relaxed

Figure 14


SINGLE JERSEY : PREDICTION OF WALES R-95&RS-OW RELAXED
Wales/cm Finished Relaxed
SINGLES YARNS
24 GAUGE
R-95
x = Ne 1-24
o = Ne 1-28
+ = Ne 1-32
RS-OW
X = Ne 1-24
O = Ne 1-28
* = Ne 1-32
Lines are calculated regressions
for R-95 & RS-OW combined
Stitch Length cm Finished Relaxed

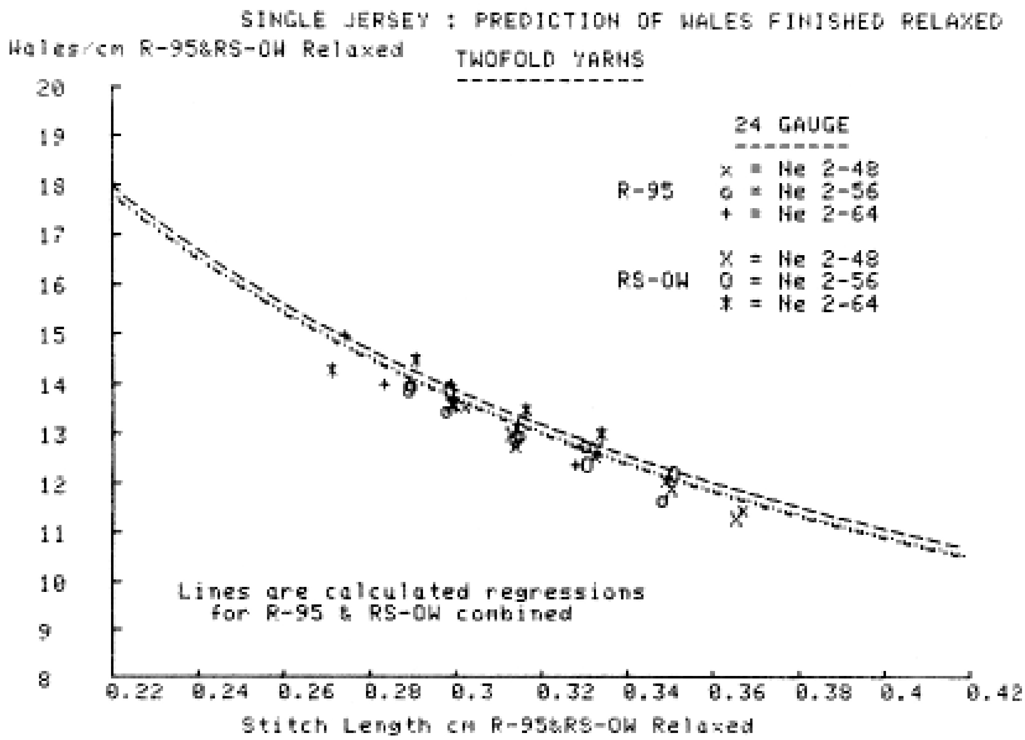
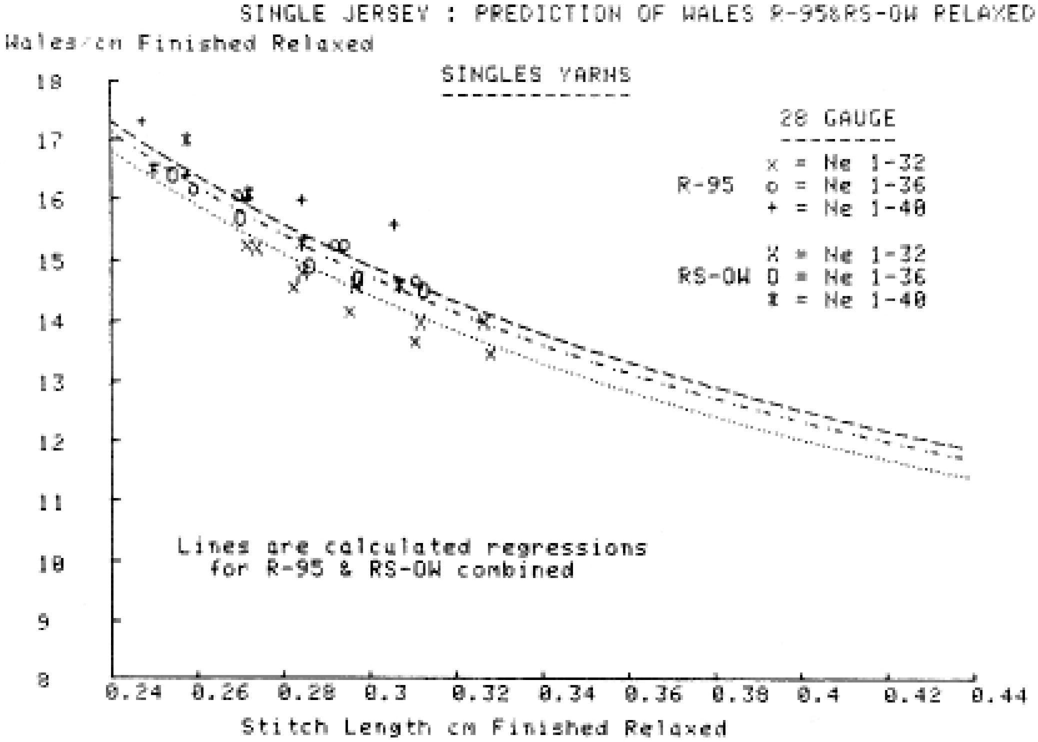

SINGLE JERSEY : PREDICTION OF WALES FINISHED RELAXED
Wales/cm R-95&RS-OW Relaxed
TWOFOLD YARNS
24 GAUGE
R-95
x = Ne 2-48
o = Ne 2-56
+ = Ne 2-64
RS-OW
X = Ne 2-48
O = Ne 2-56
* = Ne 2-64
Lines are calculated regressions
for R-95 & RS-OW combined
Stitch Length cm R-95&RS-OW Relaxed

Figure 15


SINGLE JERSEY : PREDICTION OF WALES R-95&RS-OW RELAXED
Wales/cm Finished Relaxed
SINGLES YARNS
28 GAUGE
R-95
x = Ne 1-32
o = Ne 1-36
+ = Ne 1-40
RS-OW
X = Ne 1-32
O = Ne 1-36
* = Ne 1-40
Lines are calculated regressions
for R-95 & RS-OW combined
Stitch Length cm Finished Relaxed

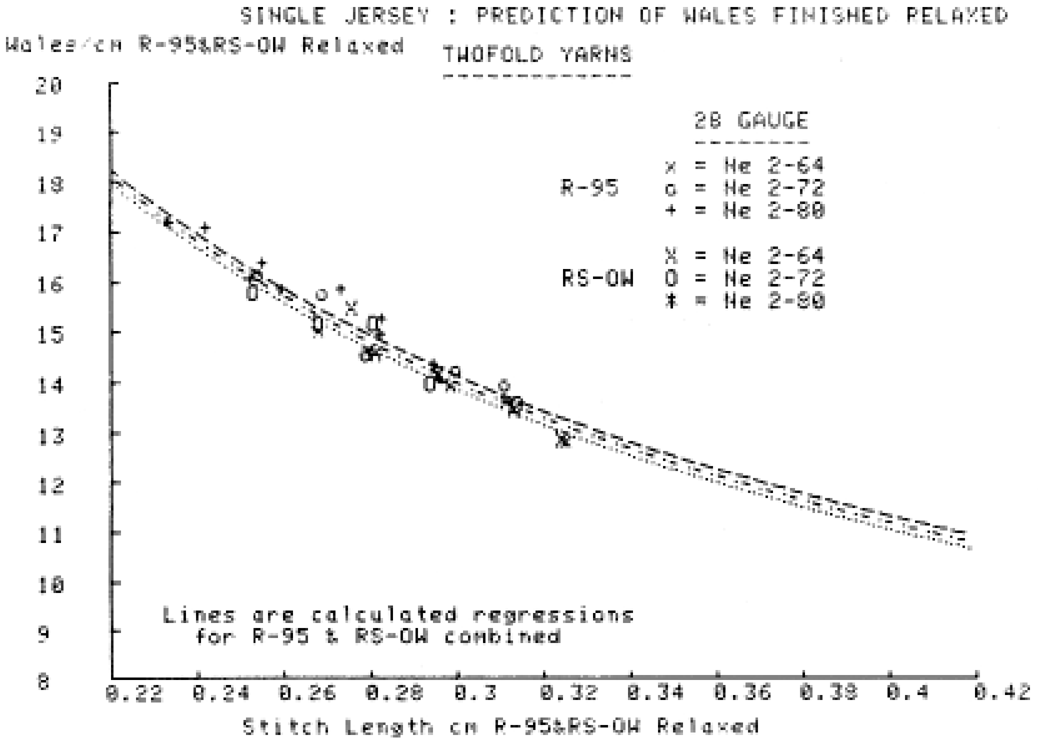
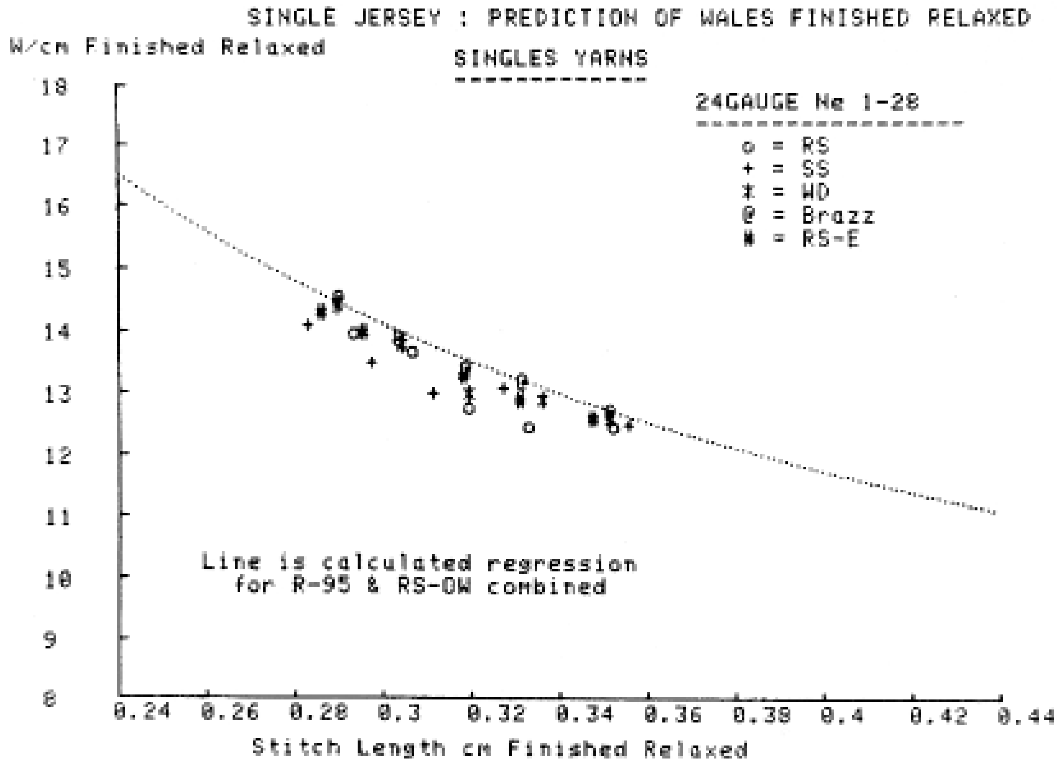

SINGLE JERSEY : PREDICTION OF WALES FINISHED RELAXED
Wales/cm R-95&RS-OW Relaxed
TWOFOLD YARNS
28 GAUGE
R-95
x = Ne 2-64
o = Ne 2-72
+ = Ne 2-80
RS-OW
X = Ne 2-64
O = Ne 2-72
* = Ne 2-80
Lines are calculated regressions
for R-95 & RS-OW combined
Stitch Length cm R-95&RS-OW Relaxed

Figure 16


SINGLE JERSEY : PREDICTION OF WALES FINISHED RELAXED
W/cm Finished Relaxed
SINGLES YARNS
24GAUGE Ne 1-28
o = RS
+ = SS
* = WD
@ = Brazz
# = RS-E
Line is calculated regression
for R-95 & RS-OW combined
18
17
16
15
14
13
12
11
10
9
8
0.24 0.26 0.28 0.3 0.32 0.34 0.36 0.38 0.4 0.42 0.44
Stitch Length cm Finished Relaxed

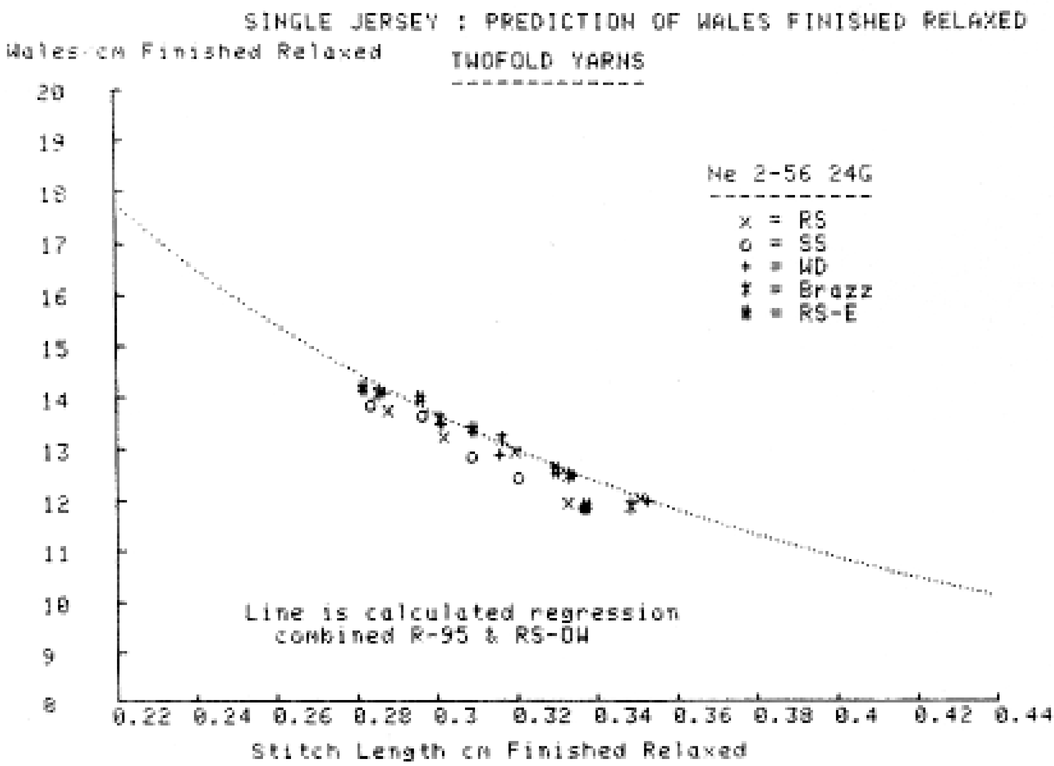
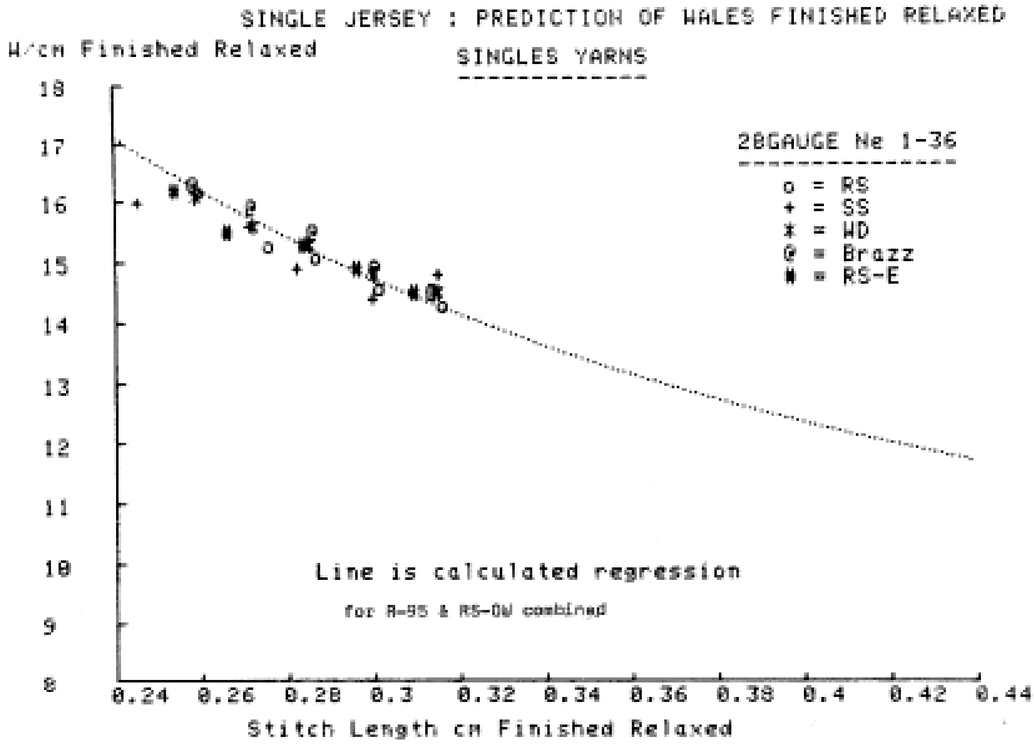

SINGLE JERSEY : PREDICTION OF WALES FINISHED RELAXED
Wales cm Finished Relaxed
TWOFOLD YARNS
Ne 2-56 24G
x = RS
o = SS
+ = WD
* = Brazz
# = RS-E
Line is calculated regression
combined R-95 & RS-OW
20
19
18
17
16
15
14
13
12
11
10
9
8
0.22 0.24 0.26 0.28 0.3 0.32 0.34 0.36 0.38 0.4 0.42 0.44
Stitch Length cm Finished Relaxed

Figure 17


SINGLE JERSEY : PREDICTION OF WALES FINISHED RELAXED
W/cm Finished Relaxed
SINGLES YARNS
28GAUGE Ne 1-36
o = RS
+ = SS
* = WD
@ = Brazz
# = RS-E
Line is calculated regression
for R-95 & RS-OW combined
Stitch Length cm Finished Relaxed

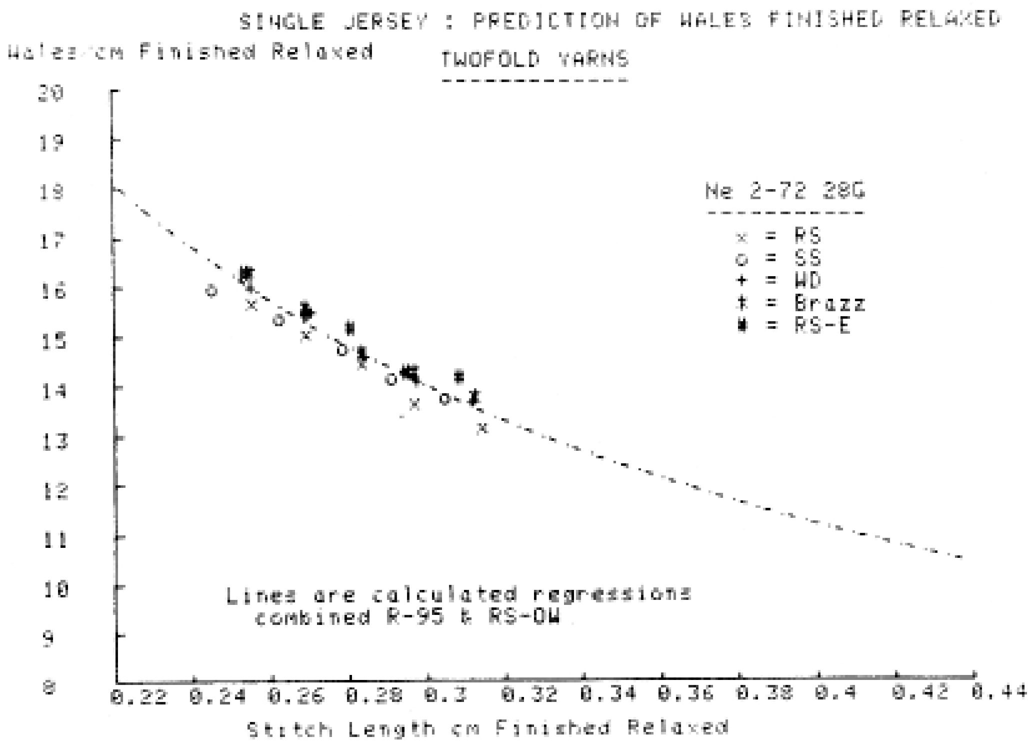
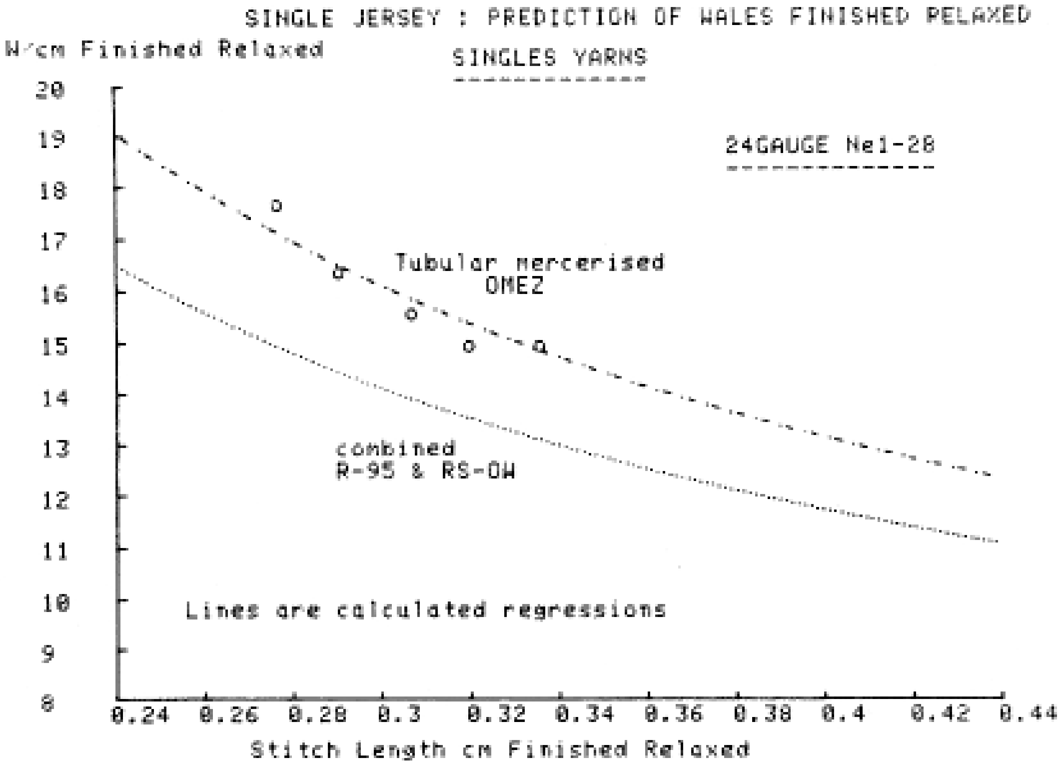

SINGLE JERSEY : PREDICTION OF WALES FINISHED RELAXED
Wales/cm Finished Relaxed
TWOFOLD YARNS
Ne 2-72 28G
x = RS
o = SS
+ = WD
‡ = Brazz
# = RS-E
Lines are calculated regressions
combined R-95 & RS-OW
Stitch Length cm Finished Relaxed

Figure 18


SINGLE JERSEY : PREDICTION OF WALES FINISHED RELAXED
W/cm Finished Relaxed
SINGLES YARNS
24GAUGE Ne1-28
Tubular mercerised
OMEZ
combined
R-95 & RS-OW
Lines are calculated regressions
20
19
18
17
16
15
14
13
12
11
10
9
8
0.24
0.26
0.28
0.3
0.32
0.34
0.36
0.38
0.4
0.42
0.44
Stitch Length cm Finished Relaxed

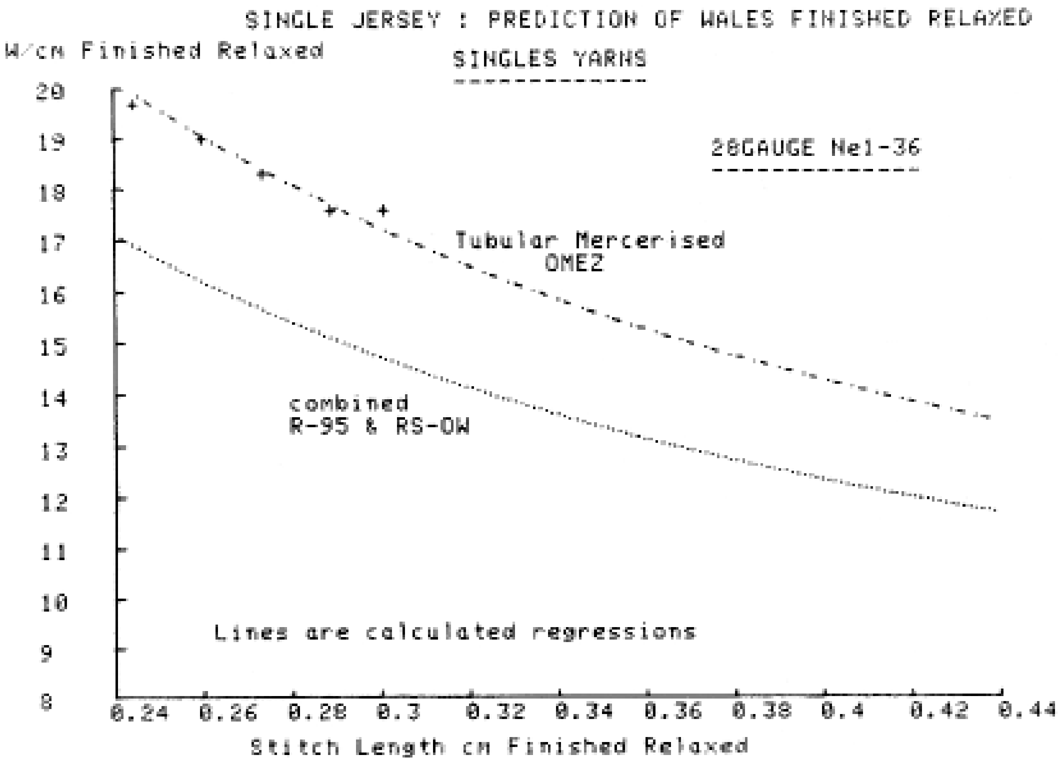
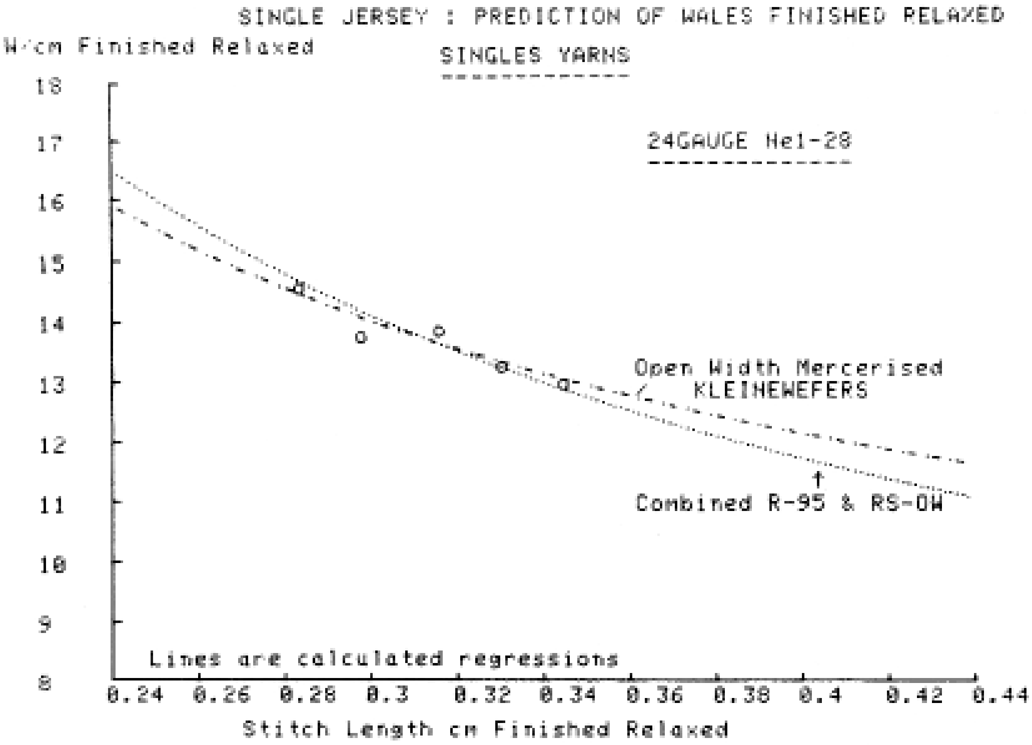

SINGLE JERSEY : PREDICTION OF WALES FINISHED RELAXED
W/cm Finished Relaxed
SINGLES YARNS
28GAUGE Ne1-36
Tubular Mercerised
OMEZ
combined
R-95 & RS-OW
Lines are calculated regressions
20
19
18
17
16
15
14
13
12
11
10
9
8
0.24
0.26
0.28
0.3
0.32
0.34
0.36
0.38
0.4
0.42
0.44
Stitch Length cm Finished Relaxed

Figure 19


SINGLE JERSEY : PREDICTION OF WALES FINISHED RELAXED
W/cm Finished Relaxed
SINGLES YARNS
24GAUGE Ne1-28
Open Width Mercerised
KLEINEWEFERS
Combined R-95 & RS-OW
Lines are calculated regressions
18
17
16
15
14
13
12
11
10
9
8
0.24 0.26 0.28 0.3 0.32 0.34 0.36 0.38 0.4 0.42 0.44
Stitch Length cm Finished Relaxed

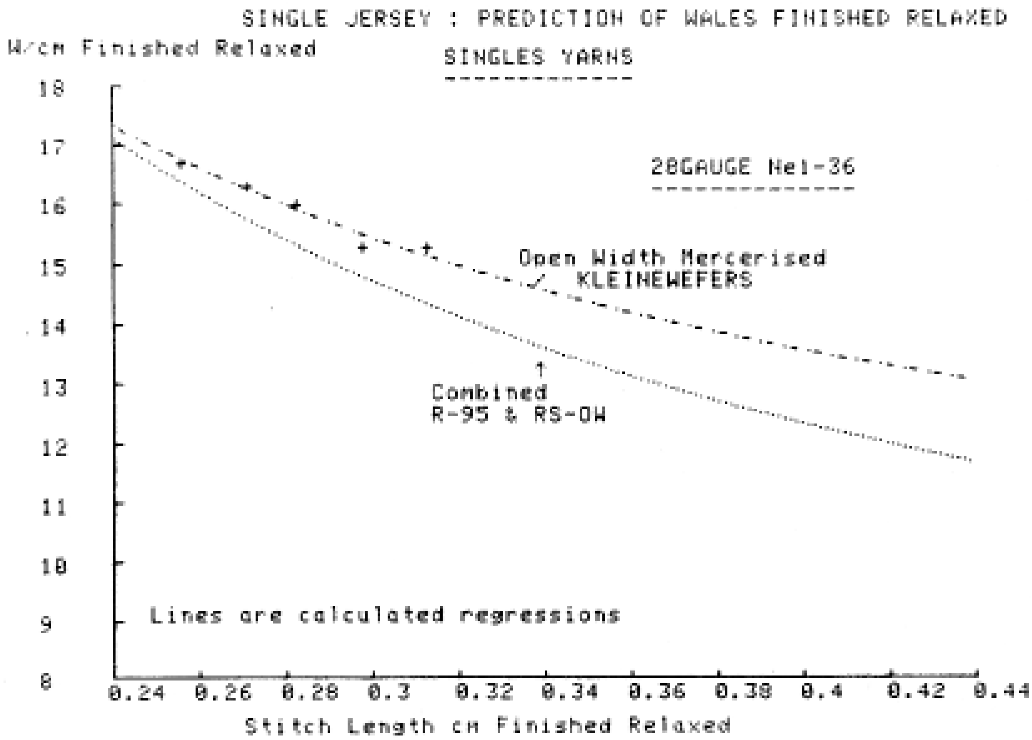
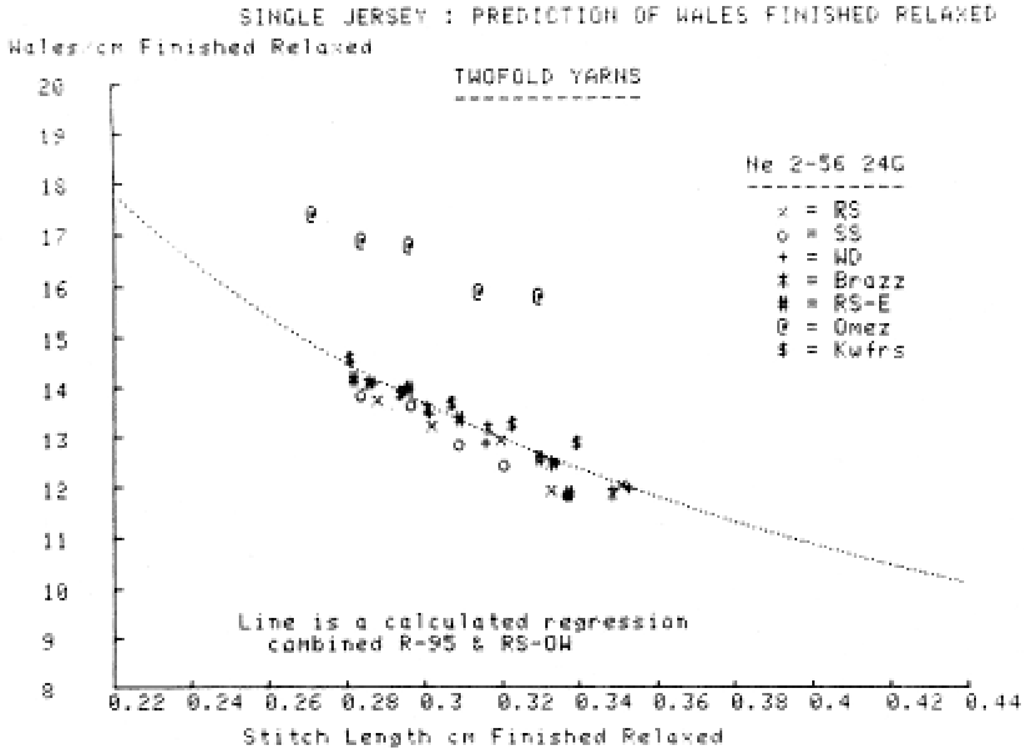

SINGLE JERSEY : PREDICTION OF WALES FINISHED RELAXED
W/cm Finished Relaxed
SINGLES YARNS
28GAUGE Ne1-36
Open Width Mercerised
KLEINEWEFERS
Combined
R-95 & RS-OW
Lines are calculated regressions
18
17
16
15
14
13
12
11
10
9
8
0.24 0.26 0.28 0.3 0.32 0.34 0.36 0.38 0.4 0.42 0.44
Stitch Length cm Finished Relaxed

Figure 20


SINGLE JERSEY : PREDICTION OF WALES FINISHED RELAXED
Wales/cm Finished Relaxed
TWOFOLD YARNS
Ne 2-56 24G
x = RS
o = SS
+ = WD
‡ = Brazz
# = RS-E
@ = Omez
$ = Kwfrs
Line is a calculated regression
combined R-95 & RS-OW
Stitch Length cm Finished Relaxed

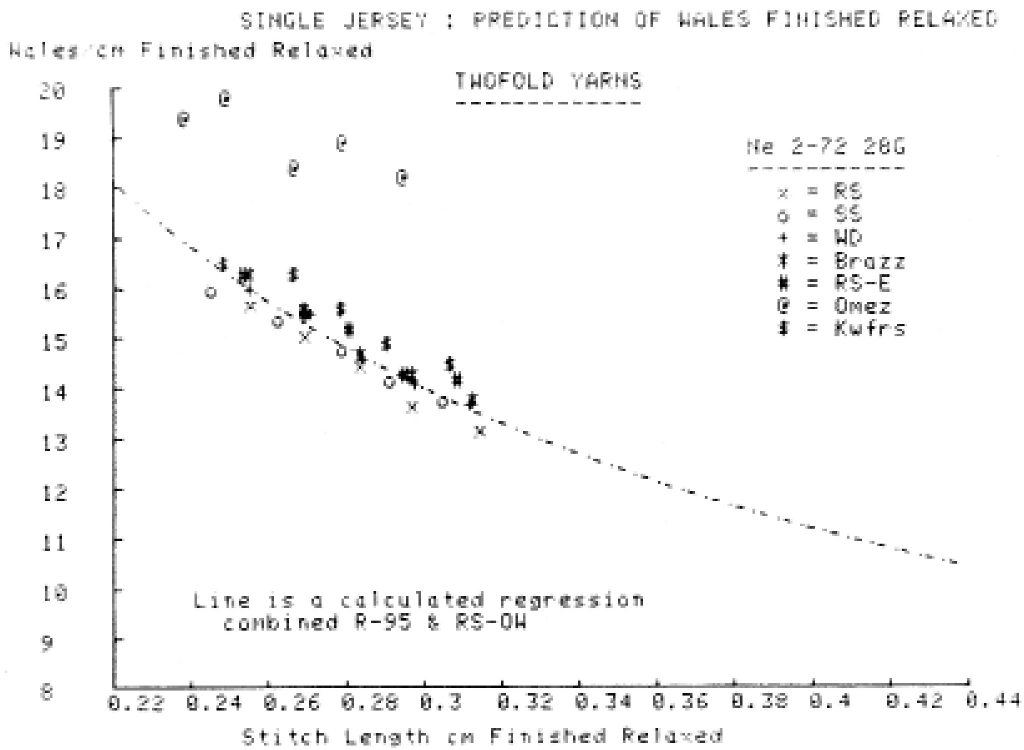
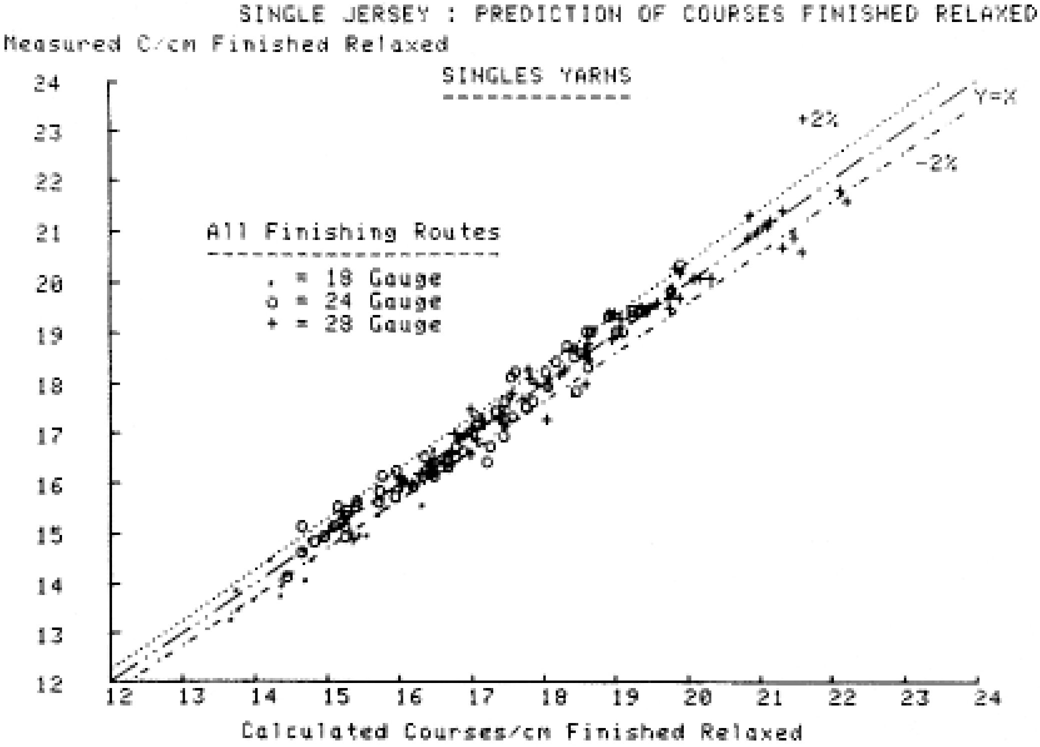

SINGLE JERSEY : PREDICTION OF WALES FINISHED RELAXED
Wales/cm Finished Relaxed
TWOFOLD YARNS
Ne 2-72 28G
x = RS
o = SS
+ = WD
‡ = Brazz
# = RS-E
@ = Omez
$ = Kwfrs
Line is a calculated regression
combined R-95 & RS-OW
Stitch Length cm Finished Relaxed

Figure 21


SINGLE JERSEY : PREDICTION OF COURSES FINISHED RELAXED
Measured C/cm Finished Relaxed
SINGLES YARNS
All Finishing Routes
. = 18 Gauge
o = 24 Gauge
+ = 28 Gauge
+2%
Y=X
-2%
12
13
14
15
16
17
18
19
20
21
22
23
24
Calculated Courses/cm Finished Relaxed

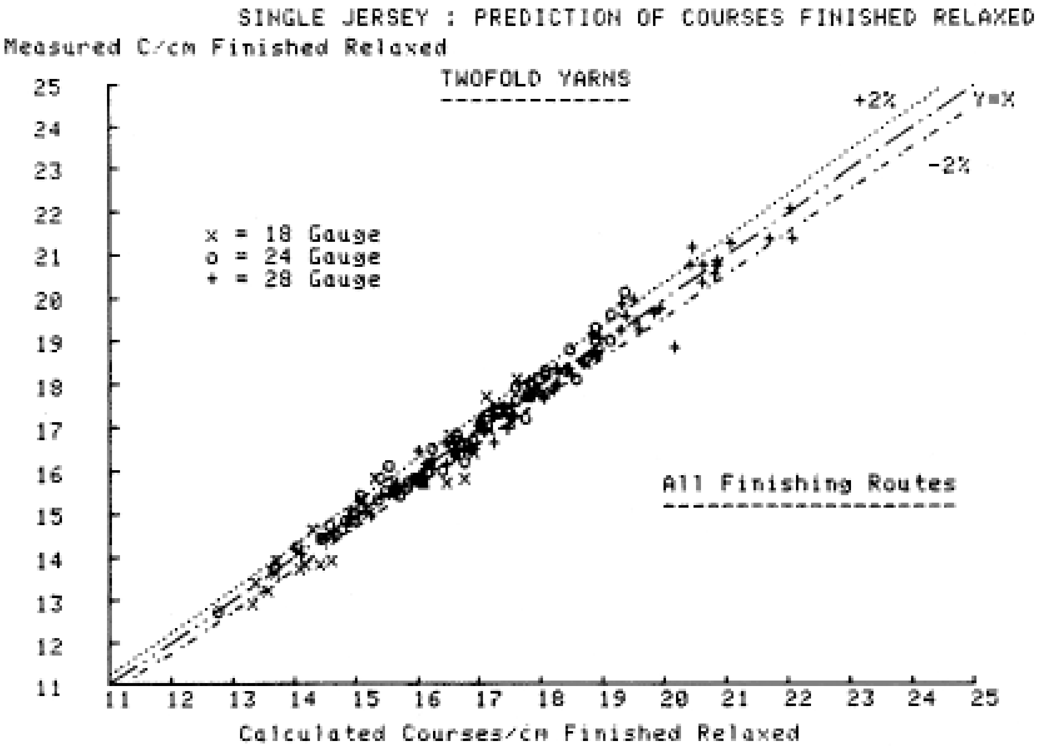
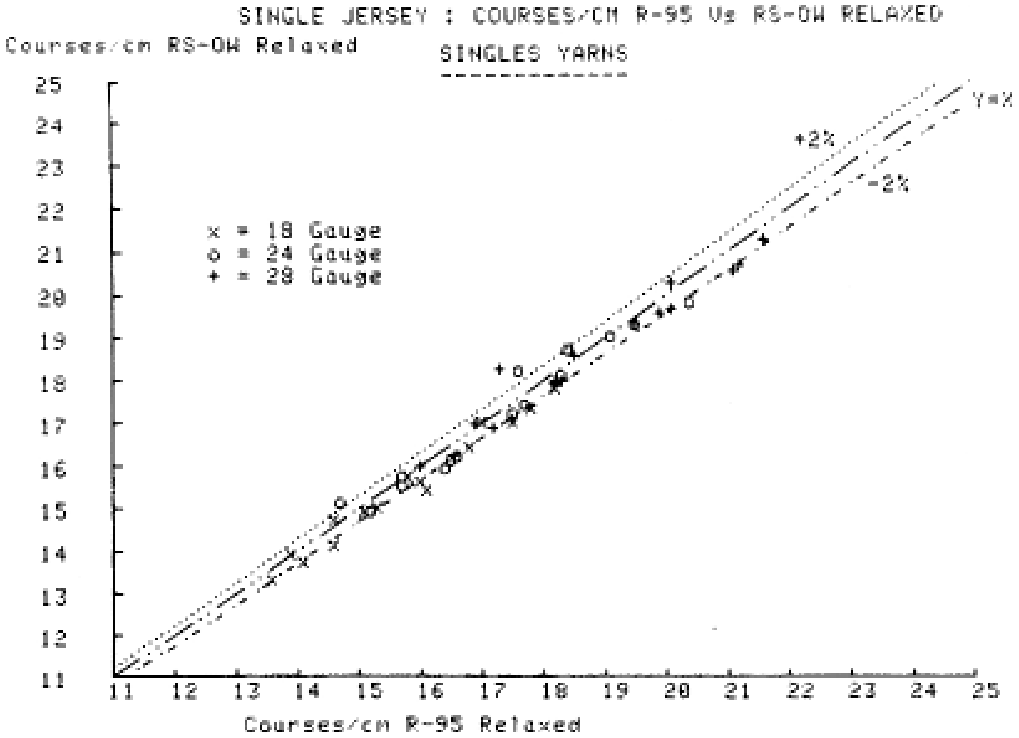

SINGLE JERSEY : PREDICTION OF COURSES FINISHED RELAXED
Measured C/cm Finished Relaxed
TWOFOLD YARNS
x = 18 Gauge
o = 24 Gauge
+ = 28 Gauge
+2%
Y=X
-2%
All Finishing Routes
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
Calculated Courses/cm Finished Relaxed

Figure 22


SINGLE JERSEY : COURSES/CM R-95 Vs RS-OW RELAXED
SINGLES YARNS
Courses/cm RS-OW Relaxed
Courses/cm R-95 Relaxed
x = 18 Gauge
o = 24 Gauge
+ = 28 Gauge
+2%
-2%
Y=X
25
24
23
22
21
20
19
18
17
16
15
14
13
12
11
11 12 13 14 15 16 17 18 19 20 21 22 23 24 25

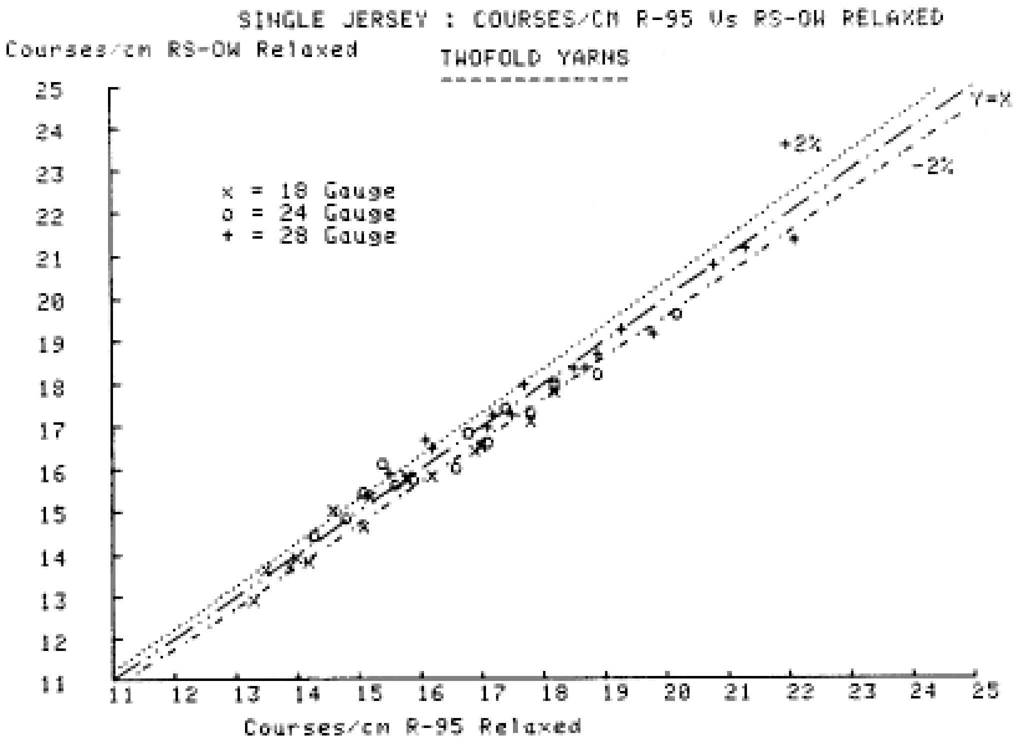
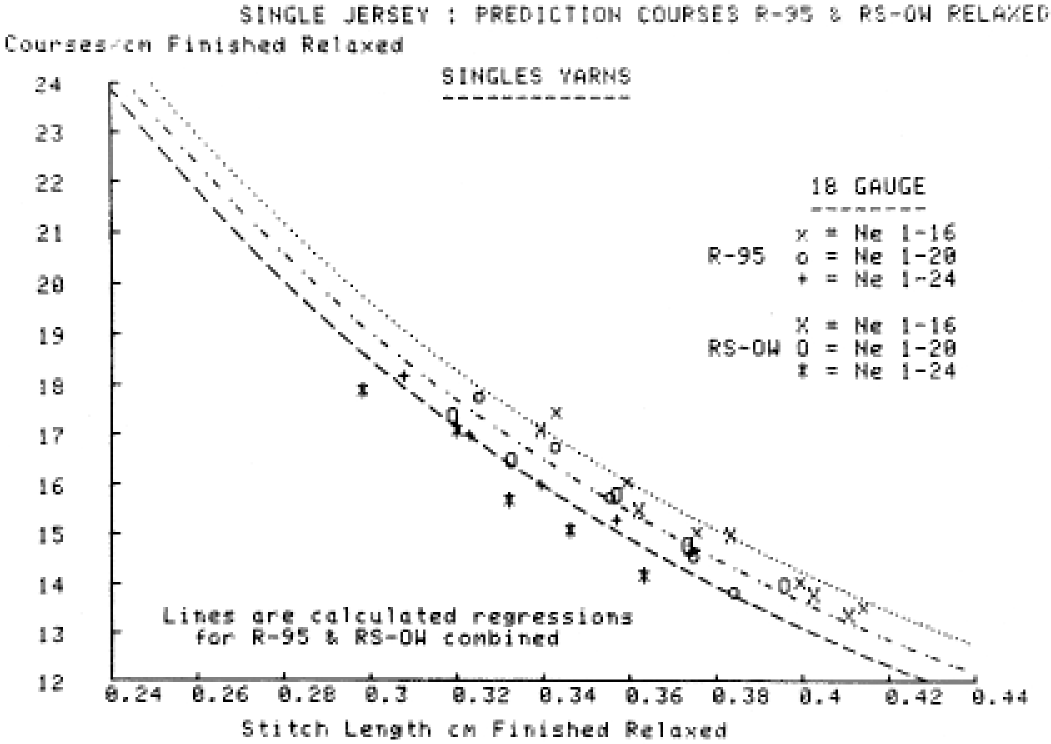

SINGLE JERSEY : COURSES/CM R-95 Vs RS-OW RELAXED
TWOFOLD YARNS
Courses/cm RS-OW Relaxed
Courses/cm R-95 Relaxed
x = 18 Gauge
o = 24 Gauge
+ = 28 Gauge
+2%
-2%
Y=X
25
24
23
22
21
20
19
18
17
16
15
14
13
12
11
11 12 13 14 15 16 17 18 19 20 21 22 23 24 25

Figure 23


SINGLE JERSEY : PREDICTION COURSES R-95 & RS-OW RELAXED
Courses/cm Finished Relaxed
SINGLES YARNS
18 GAUGE
R-95 x = Ne 1-16
o = Ne 1-20
+ = Ne 1-24
RS-OW X = Ne 1-16
O = Ne 1-20
‡ = Ne 1-24
Lines are calculated regressions for R-95 & RS-OW combined
Stitch Length cm Finished Relaxed

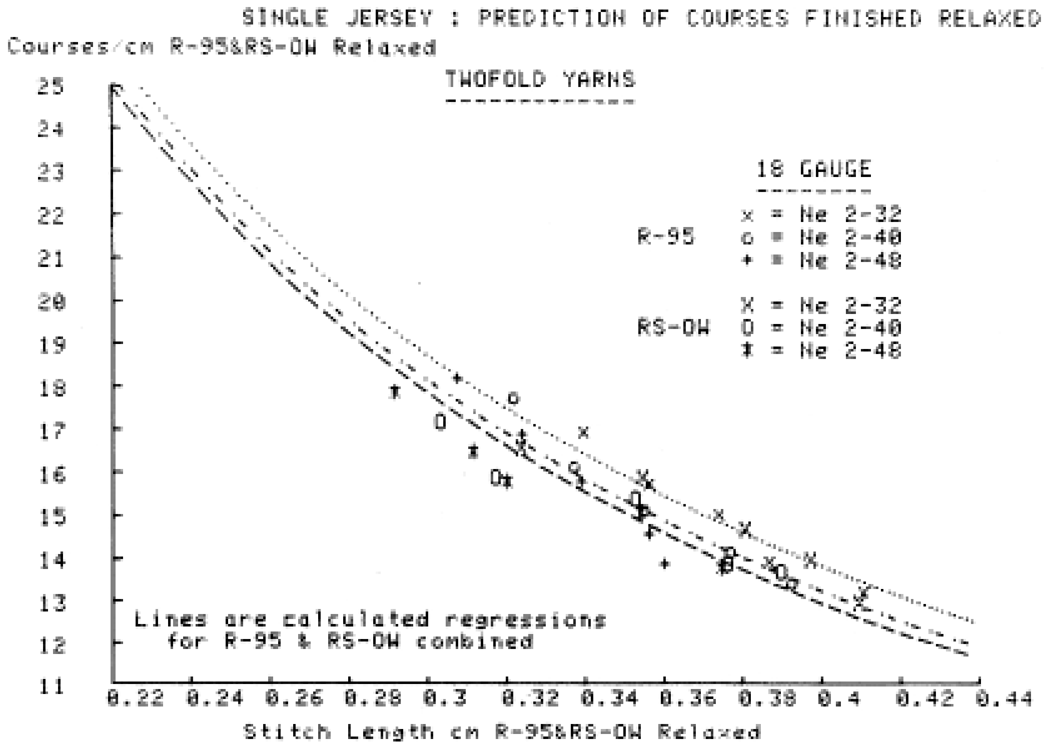
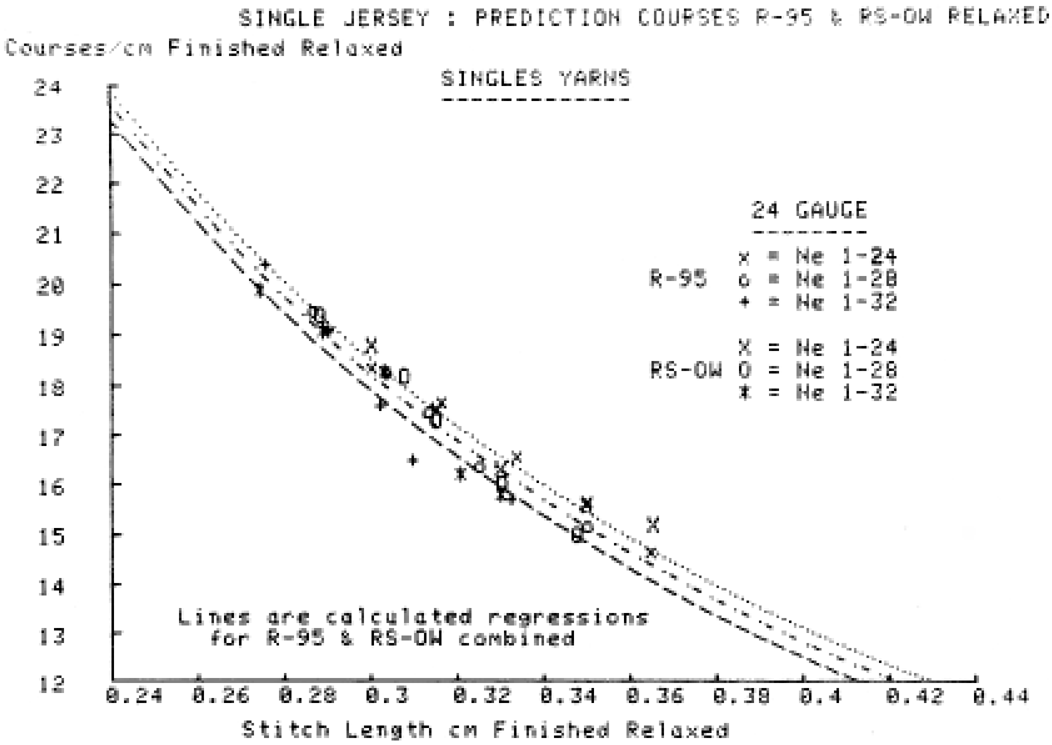

SINGLE JERSEY : PREDICTION OF COURSES FINISHED RELAXED
Courses/cm R-95&RS-OW Relaxed
TWOFOLD YARNS
18 GAUGE
R-95 x = Ne 2-32
o = Ne 2-40
+ = Ne 2-48
RS-OW X = Ne 2-32
O = Ne 2-40
‡ = Ne 2-48
Lines are calculated regressions for R-95 & RS-OW combined
Stitch Length cm R-95&RS-OW Relaxed

Figure 24


SINGLE JERSEY : PREDICTION COURSES R-95 & RS-OW RELAXED
Courses/cm Finished Relaxed
SINGLES YARNS
24 GAUGE
R-95 x = Ne 1-24
o = Ne 1-28
+ = Ne 1-32
RS-OW X = Ne 1-24
O = Ne 1-28
* = Ne 1-32
Lines are calculated regressions
for R-95 & RS-OW combined
Stitch Length cm Finished Relaxed

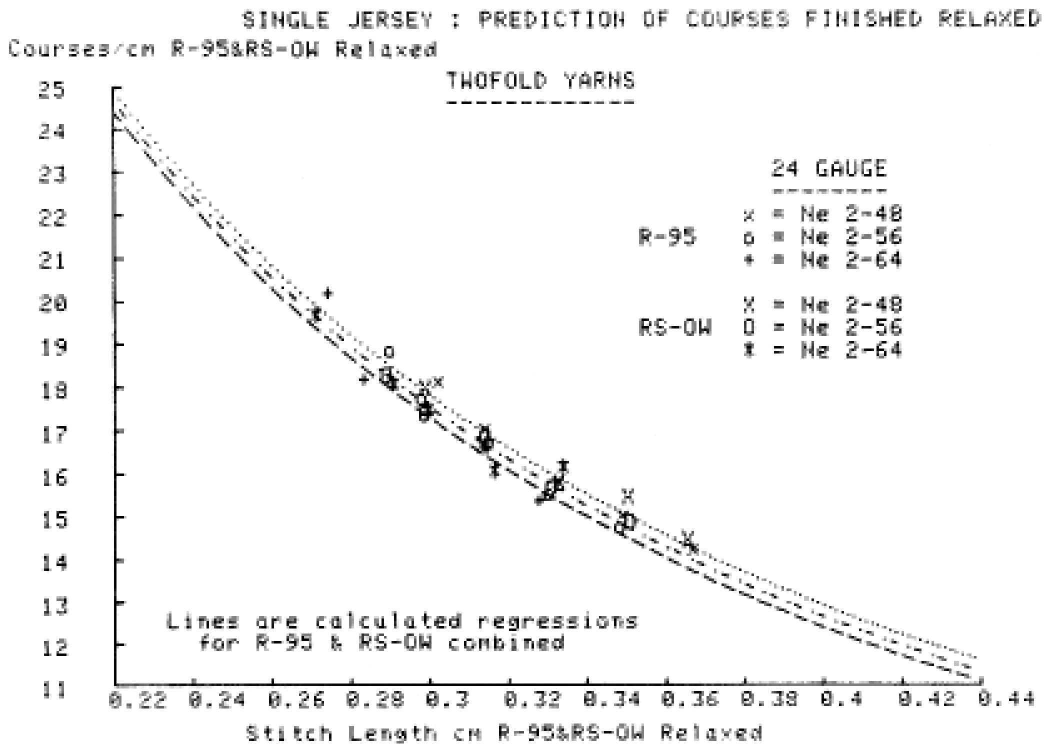
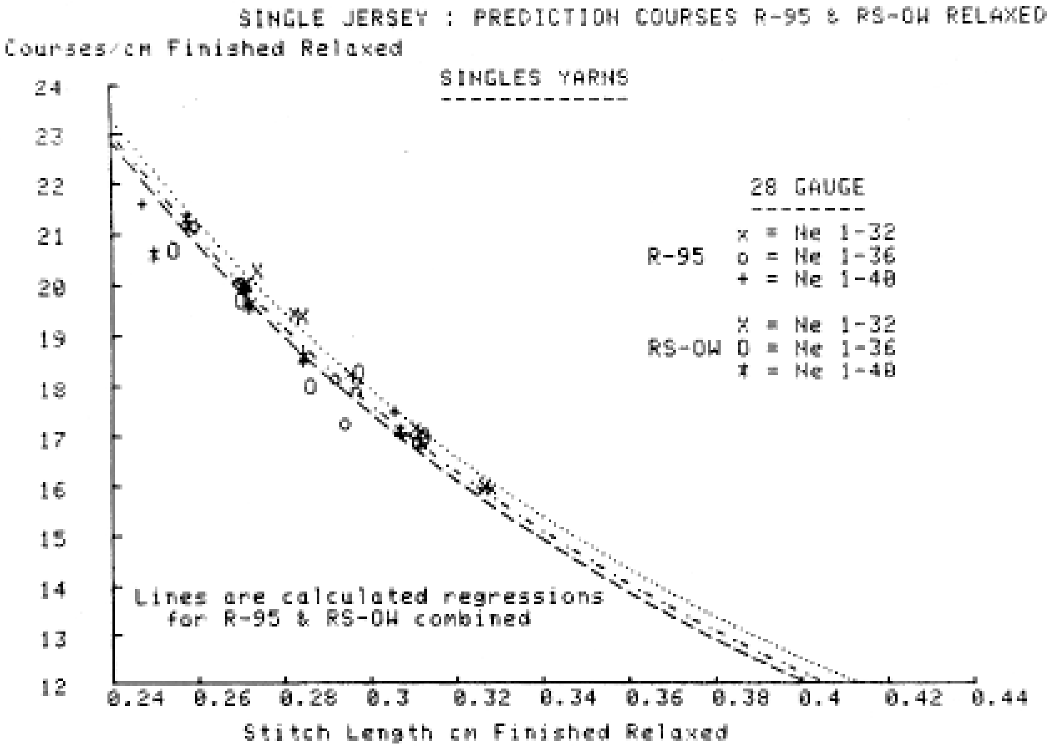

SINGLE JERSEY : PREDICTION OF COURSES FINISHED RELAXED
Courses/cm R-95&RS-OW Relaxed
TWOFOLD YARNS
24 GAUGE
R-95 x = Ne 2-48
o = Ne 2-56
+ = Ne 2-64
RS-OW X = Ne 2-48
O = Ne 2-56
* = Ne 2-64
Lines are calculated regressions
for R-95 & RS-OW combined
Stitch Length cm R-95&RS-OW Relaxed

Figure 25


SINGLE JERSEY : PREDICTION COURSES R-95 & RS-OW RELAXED
Courses/cm Finished Relaxed
SINGLES YARNS
28 GAUGE
R-95 x = Ne 1-32
o = Ne 1-36
+ = Ne 1-40
RS-OW X = Ne 1-32
O = Ne 1-36
‡ = Ne 1-40
Lines are calculated regressions for R-95 & RS-OW combined
Stitch Length cm Finished Relaxed

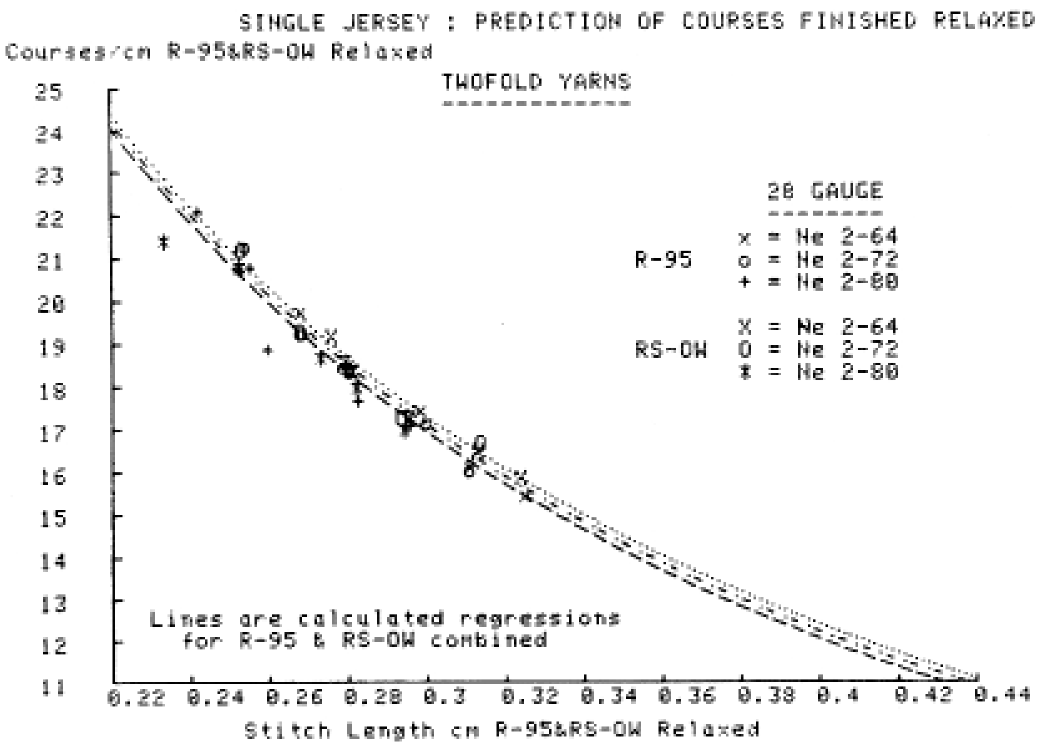
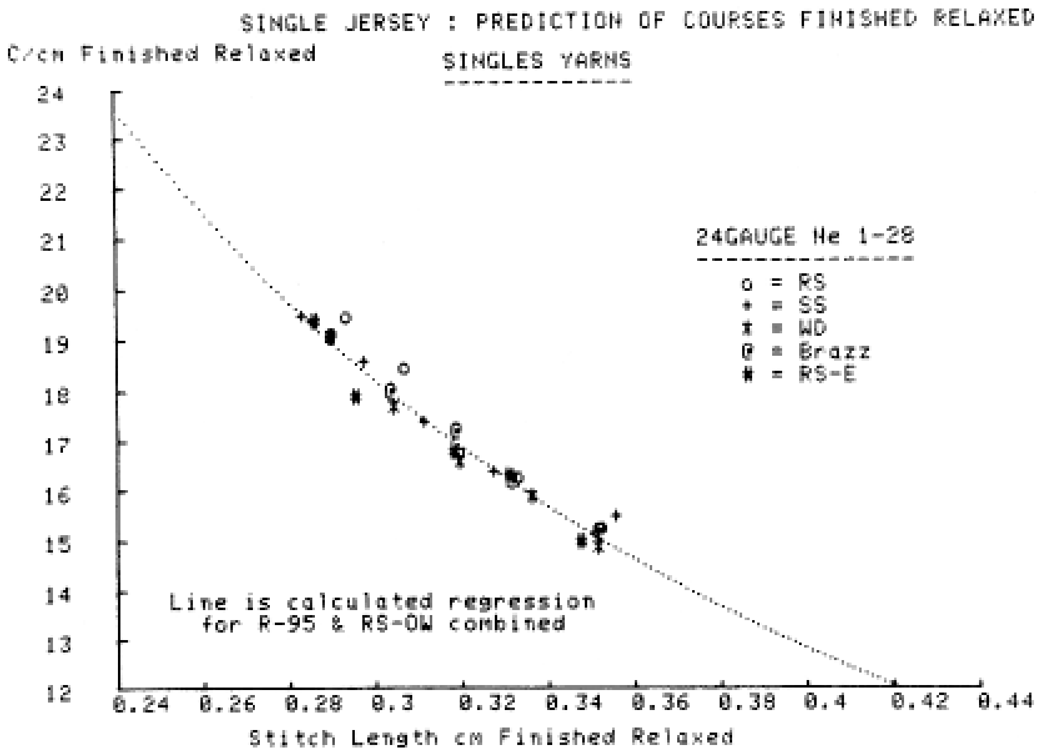

SINGLE JERSEY : PREDICTION OF COURSES FINISHED RELAXED
Courses/cm R-95&RS-OW Relaxed
TWOFOLD YARNS
28 GAUGE
R-95 x = Ne 2-64
o = Ne 2-72
+ = Ne 2-80
RS-OW X = Ne 2-64
O = Ne 2-72
‡ = Ne 2-80
Lines are calculated regressions for R-95 & RS-OW combined
Stitch Length cm R-95&RS-OW Relaxed

Figure 26


SINGLE JERSEY : PREDICTION OF COURSES FINISHED RELAXED
C/cm Finished Relaxed
SINGLES YARNS
24GAUGE Ne 1-28
o = RS
+ = SS
* = WD
@ = Brazz
# = RS-E
Line is calculated regression
for R-95 & RS-OW combined
Stitch Length cm Finished Relaxed

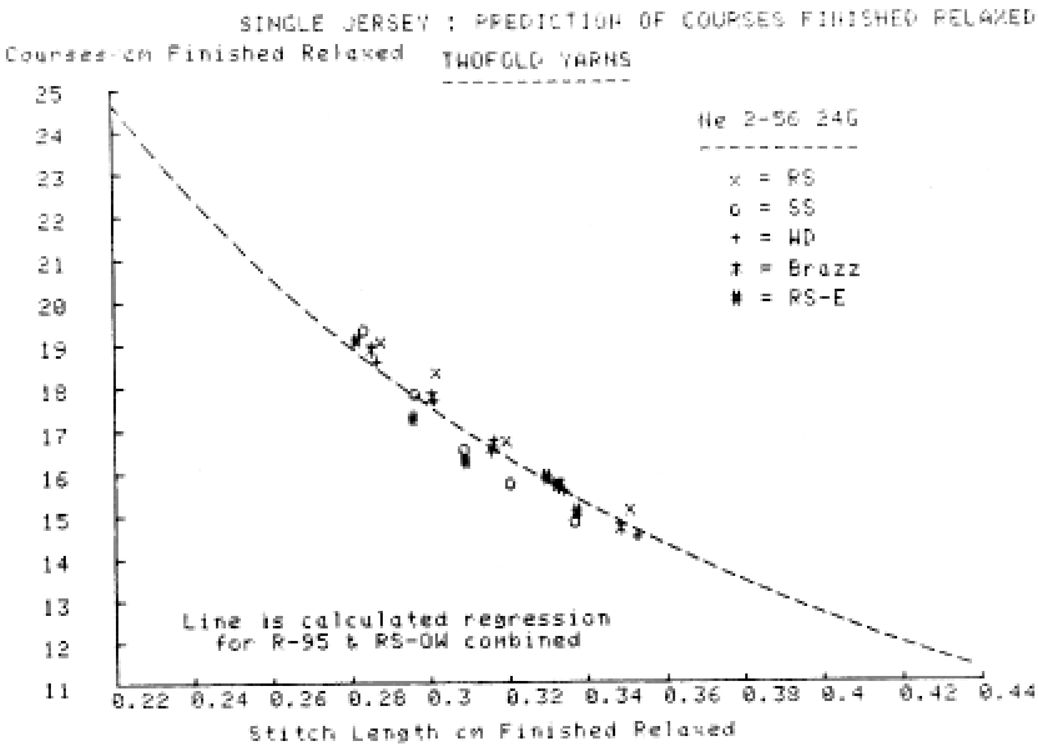
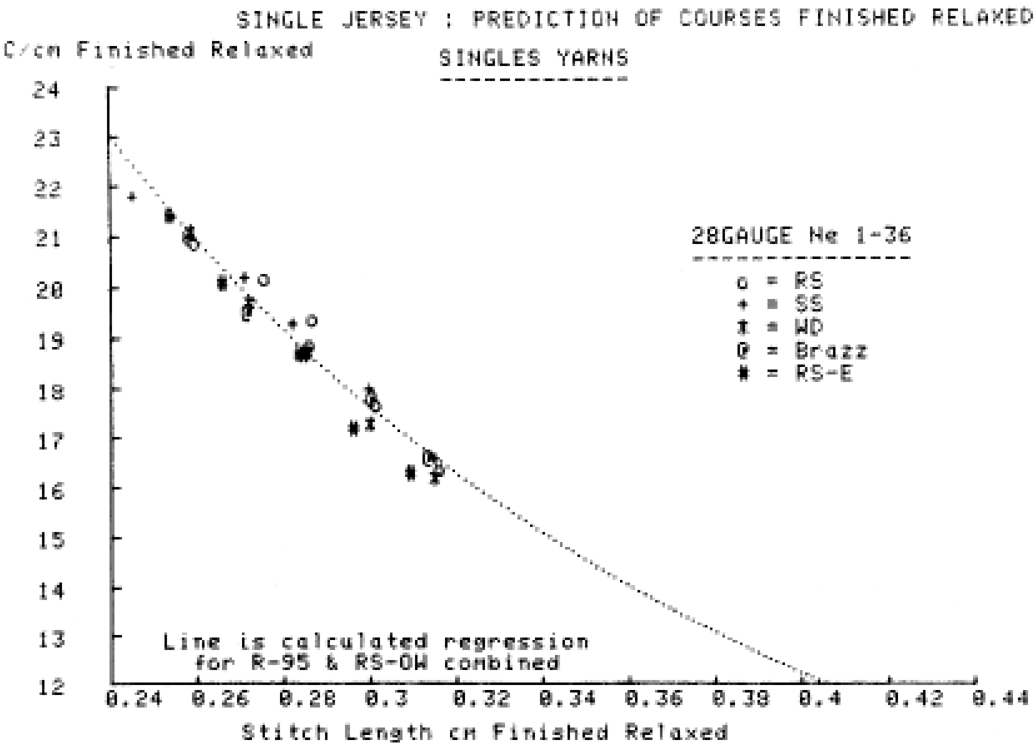
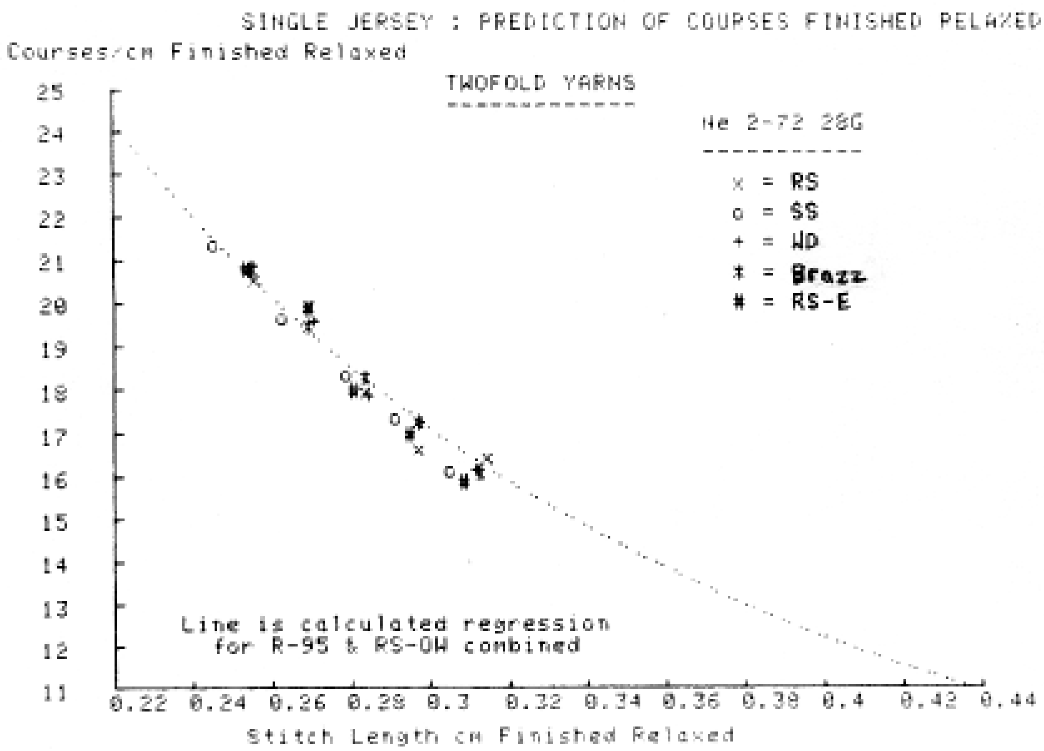

SINGLE JERSEY : PREDICTION OF COURSES FINISHED RELAXED
Courses-cm Finished Relaxed
TWOFOLD YARNS
Ne 2-56 24G
x = RS
o = SS
+ = WD
* = Brazz
# = RS-E
Line is calculated regression
for R-95 & RS-OW combined
Stitch Length cm Finished Relaxed

Figure 27

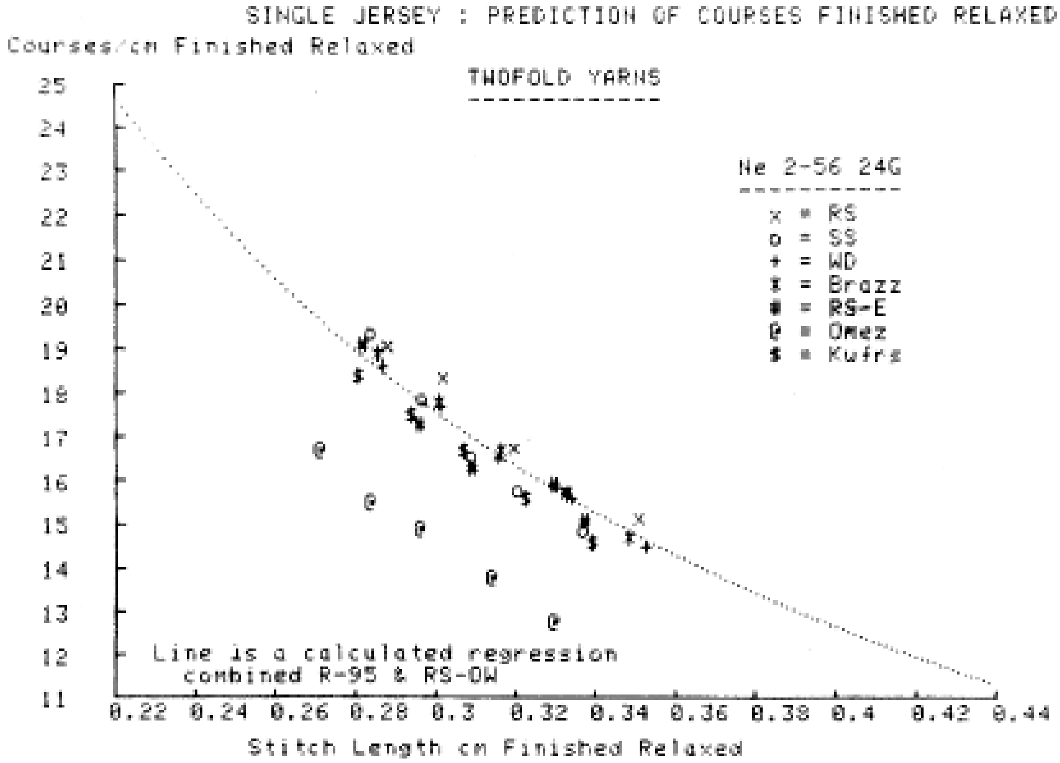


SINGLE JERSEY : PREDICTION OF COURSES FINISHED RELAXED
C/cm Finished Relaxed
SINGLES YARNS
28GAUGE Ne 1-36
o = RS
+ = SS
‡ = WD
@ = Brazz
# = RS-E
Line is calculated regression for R-95 & RS-OW combined
24
23
22
21
20
19
18
17
16
15
14
13
12
0.24 0.26 0.28 0.3 0.32 0.34 0.36 0.38 0.4 0.42 0.44
Stitch Length cm Finished Relaxed



SINGLE JERSEY : PREDICTION OF COURSES FINISHED RELAXED
Courses/cm Finished Relaxed
TWOFOLD YARNS
Ne 2-72 28G
x = RS
o = SS
+ = WD
‡ = Brazz
# = RS-E
Line is calculated regression for R-95 & RS-OW combined
25
24
23
22
21
20
19
18
17
16
15
14
13
12
11
0.22 0.24 0.26 0.28 0.3 0.32 0.34 0.36 0.38 0.4 0.42 0.44
Stitch Length cm Finished Relaxed

Figure 28


SINGLE JERSEY : PREDICTION OF COURSES FINISHED RELAXED
Courses/cm Finished Relaxed
TWOFOLD YARNS
Ne 2-56 24G
x = RS
o = SS
+ = WD
* = Brazz
# = RS-E
@ = Omez
$ = Kufrs
Line is a calculated regression
combined R-95 & RS-OW
25
24
23
22
21
20
19
18
17
16
15
14
13
12
11
0.22
0.24
0.26
0.28
0.3
0.32
0.34
0.36
0.38
0.4
0.42
0.44
Stitch Length cm Finished Relaxed

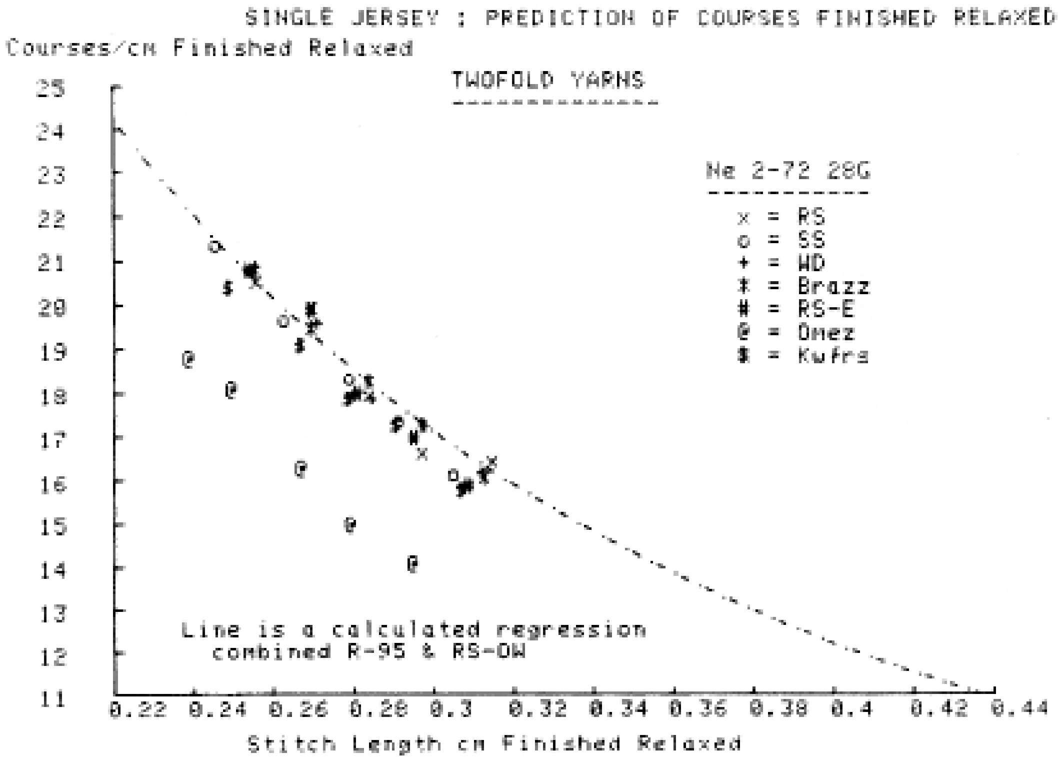
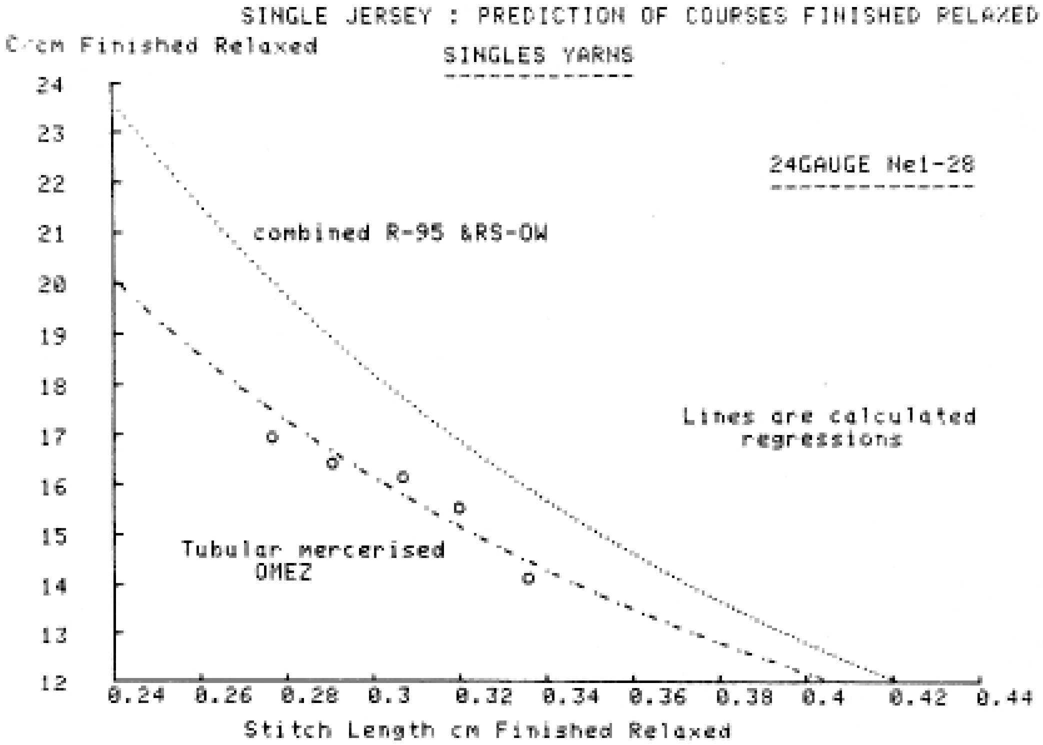

SINGLE JERSEY : PREDICTION OF COURSES FINISHED RELAXED
Courses/cm Finished Relaxed
TWOFOLD YARNS
Ne 2-72 28G
x = RS
o = SS
+ = WD
* = Brazz
# = RS-E
@ = Omez
$ = Kufrs
Line is a calculated regression
combined R-95 & RS-OW
25
24
23
22
21
20
19
18
17
16
15
14
13
12
11
0.22
0.24
0.26
0.28
0.3
0.32
0.34
0.36
0.38
0.4
0.42
0.44
Stitch Length cm Finished Relaxed

Figure 29


SINGLE JERSEY : PREDICTION OF COURSES FINISHED RELAXED
C/cm Finished Relaxed
SINGLES YARNS
24GAUGE Ne1-28
combined R-95 &RS-OW
Lines are calculated regressions
Tubular mercerised OMEZ
24
23
22
21
20
19
18
17
16
15
14
13
12
0.24 0.26 0.28 0.3 0.32 0.34 0.36 0.38 0.4 0.42 0.44
Stitch Length cm Finished Relaxed

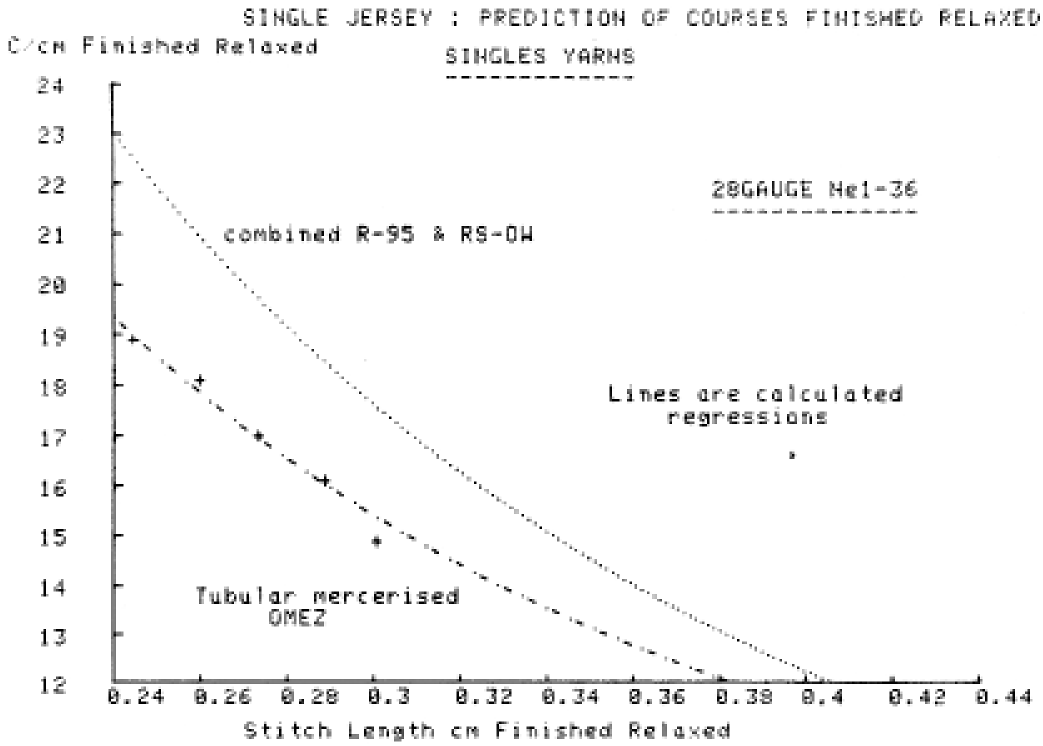
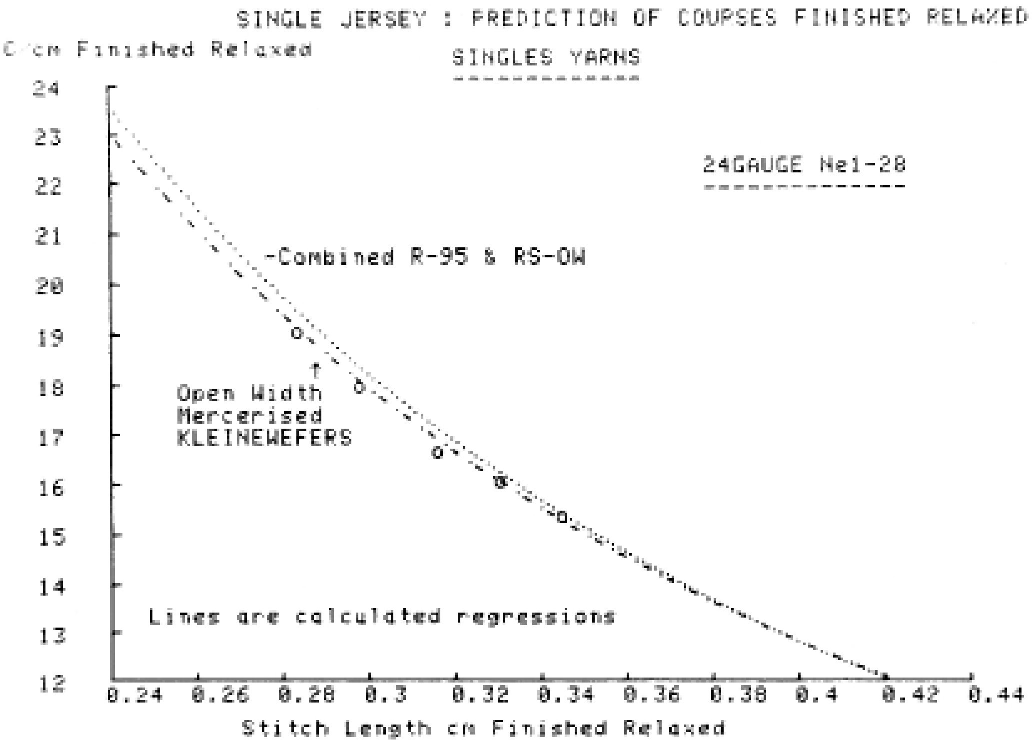
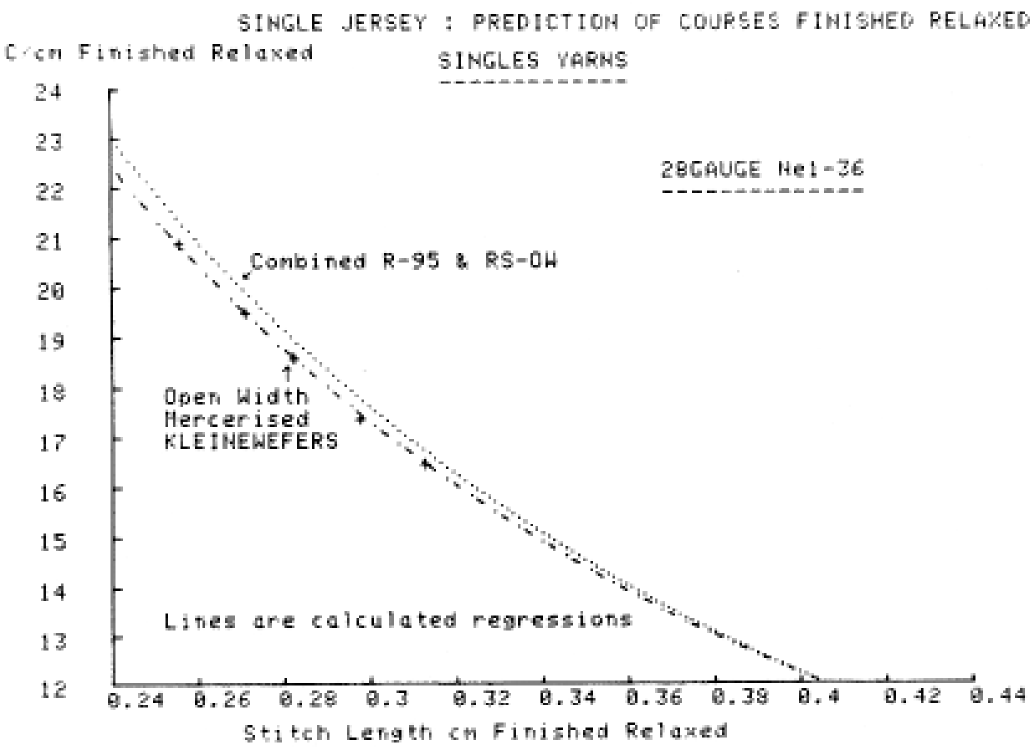

SINGLE JERSEY : PREDICTION OF COURSES FINISHED RELAXED
C/cm Finished Relaxed
SINGLES YARNS
28GAUGE Ne1-36
combined R-95 & RS-OW
Lines are calculated regressions
Tubular mercerised OMEZ
24
23
22
21
20
19
18
17
16
15
14
13
12
0.24 0.26 0.28 0.3 0.32 0.34 0.36 0.38 0.4 0.42 0.44
Stitch Length cm Finished Relaxed

Figure 30

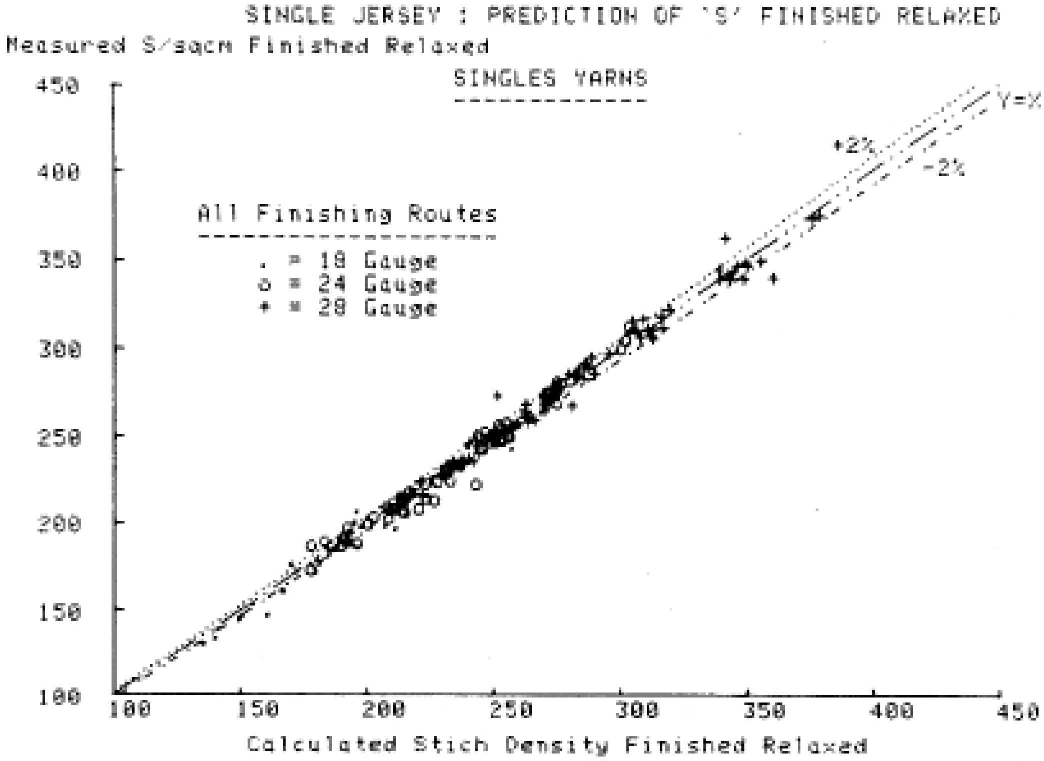


SINGLE JERSEY : PREDICTION OF COURSES FINISHED RELAXED
C/cm Finished Relaxed
SINGLES YARNS
24GAUGE Ne1-28
-Combined R-95 & RS-OW
Open Width
Mercerised
KLEINEWEFERS
Lines are calculated regressions
24
23
22
21
20
19
18
17
16
15
14
13
12
0.24
0.26
0.28
0.3
0.32
0.34
0.36
0.38
0.4
0.42
0.44
Stitch Length cm Finished Relaxed



SINGLE JERSEY : PREDICTION OF COURSES FINISHED RELAXED
C/cm Finished Relaxed
SINGLES YARNS
28GAUGE Ne1-36
Combined R-95 & RS-OW
Open Width
Mercerised
KLEINEWEFERS
Lines are calculated regressions
24
23
22
21
20
19
18
17
16
15
14
13
12
0.24
0.26
0.28
0.3
0.32
0.34
0.36
0.38
0.4
0.42
0.44
Stitch Length cm Finished Relaxed

Figure 31


SINGLE JERSEY : PREDICTION OF `S' FINISHED RELAXED
Measured S/sqcm Finished Relaxed
SINGLES YARNS
All Finishing Routes
. = 18 Gauge
o = 24 Gauge
+ = 28 Gauge
+2%
-2%
Y=X
Calculated Stich Density Finished Relaxed

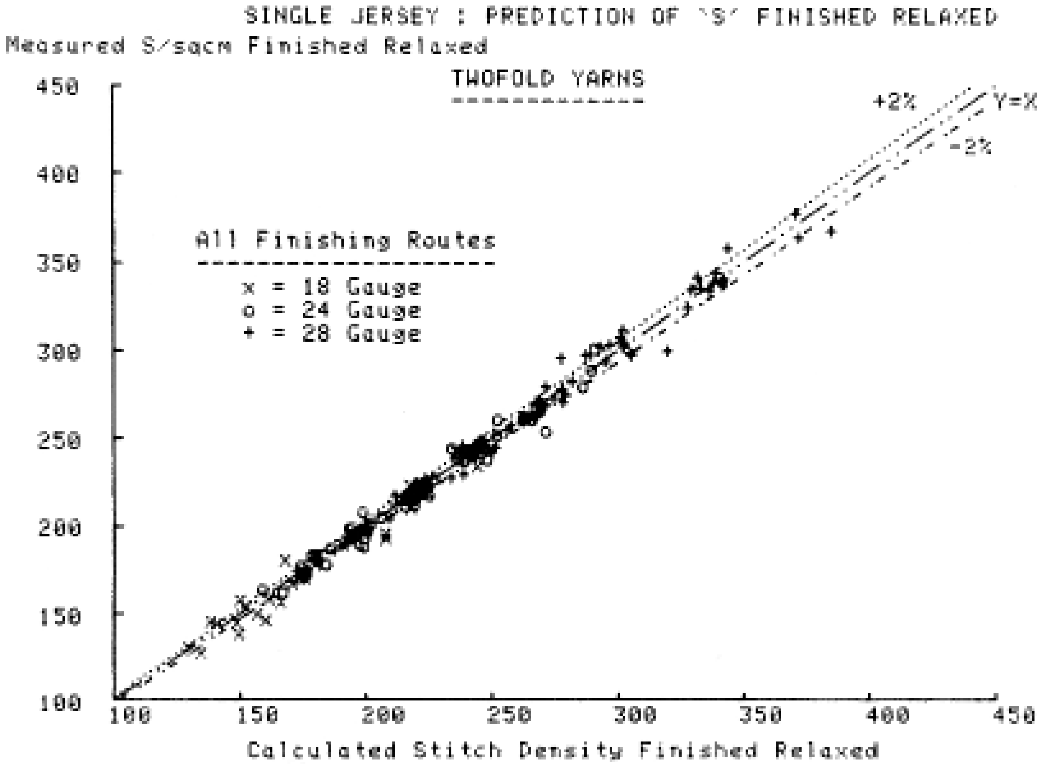
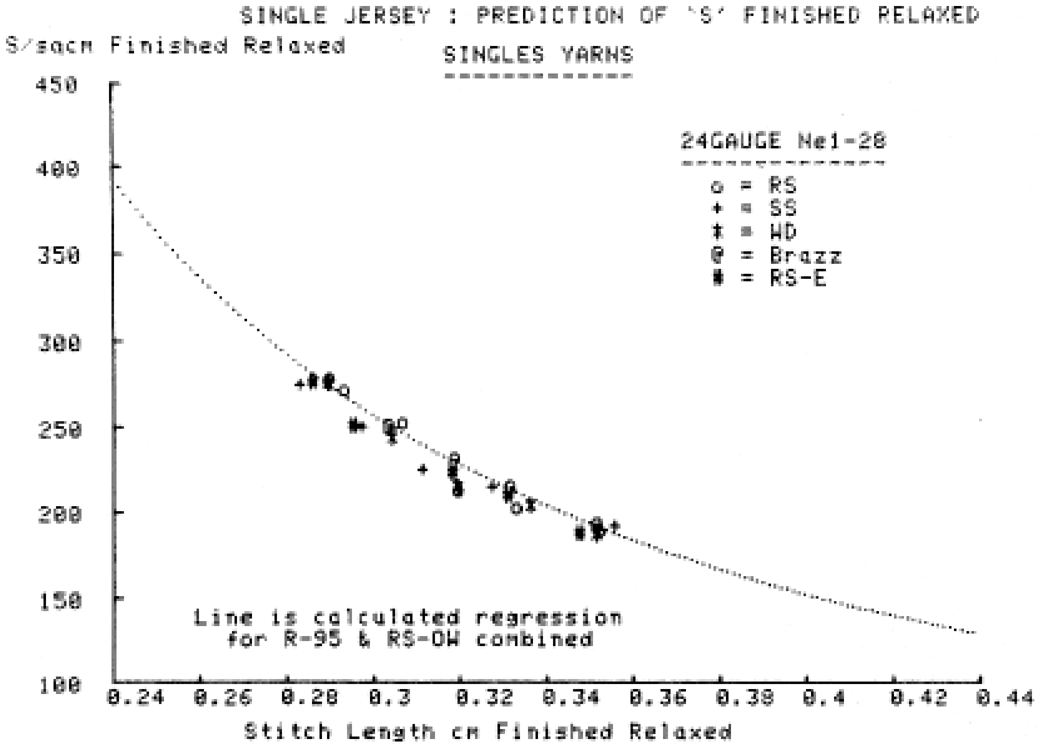

SINGLE JERSEY : PREDICTION OF `S' FINISHED RELAXED
Measured S/sqcm Finished Relaxed
TWOFOLD YARNS
All Finishing Routes
x = 18 Gauge
o = 24 Gauge
+ = 28 Gauge
+2%
-2%
Y=X
Calculated Stitch Density Finished Relaxed

Figure 32


SINGLE JERSEY : PREDICTION OF 'S' FINISHED RELAXED
S/sqcm Finished Relaxed
SINGLES YARNS
24GAUGE Ne1-28
o = RS
+ = SS
‡ = WD
@ = Brazz
# = RS-E
Line is calculated regression for R-95 & RS-OW combined
Stitch Length cm Finished Relaxed
450
400
350
300
250
200
150
100
0.24
0.26
0.28
0.3
0.32
0.34
0.36
0.38
0.4
0.42
0.44

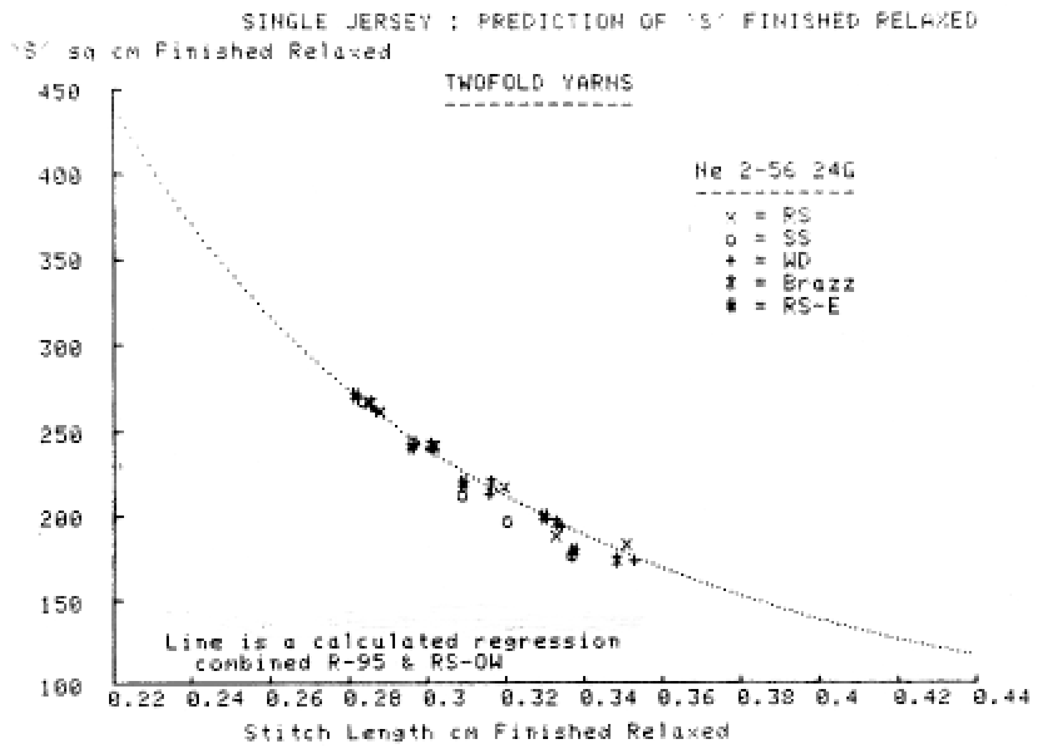
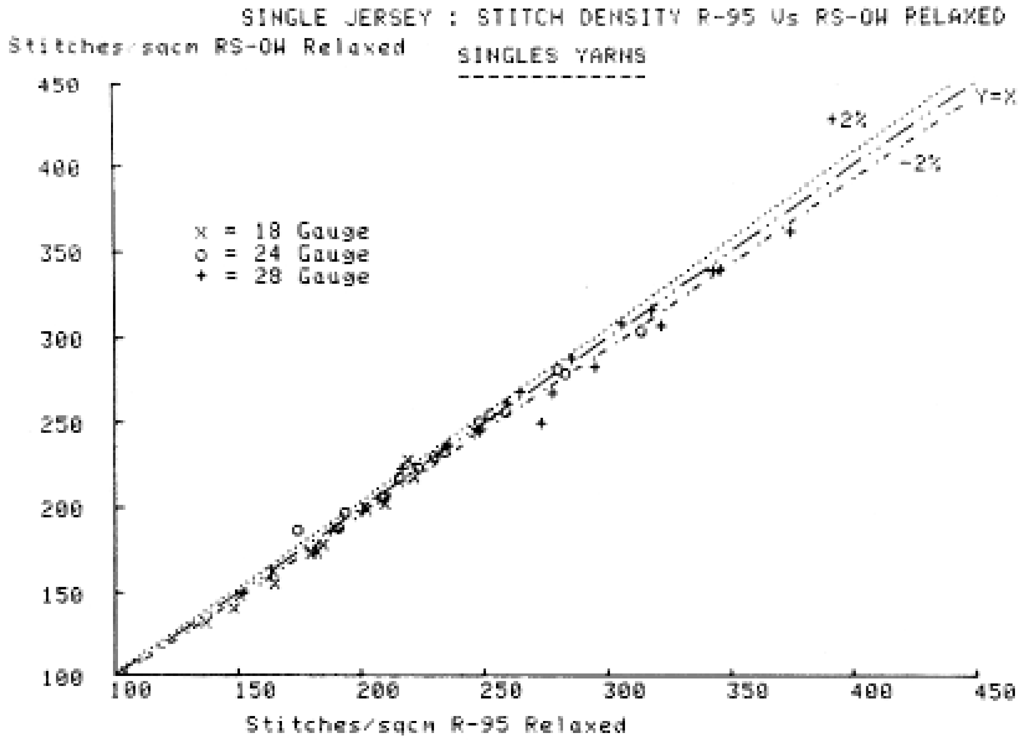

SINGLE JERSEY : PREDICTION OF 'S' FINISHED RELAXED
'S' sq cm Finished Relaxed
TWOFOLD YARNS
Ne 2-56 24G
x = RS
o = SS
+ = WD
‡ = Brazz
# = RS-E
Line is a calculated regression combined R-95 & RS-OW
Stitch Length cm Finished Relaxed
450
400
350
300
250
200
150
100
0.22
0.24
0.26
0.28
0.3
0.32
0.34
0.36
0.38
0.4
0.42
0.44

Figure 33


SINGLE JERSEY : STITCH DENSITY R-95 Vs RS-OW RELAXED
Stitches/sqcm RS-OW Relaxed
SINGLES YARNS
x = 18 Gauge
o = 24 Gauge
+ = 28 Gauge
+2%
-2%
Y=X
Stitches/sqcm R-95 Relaxed

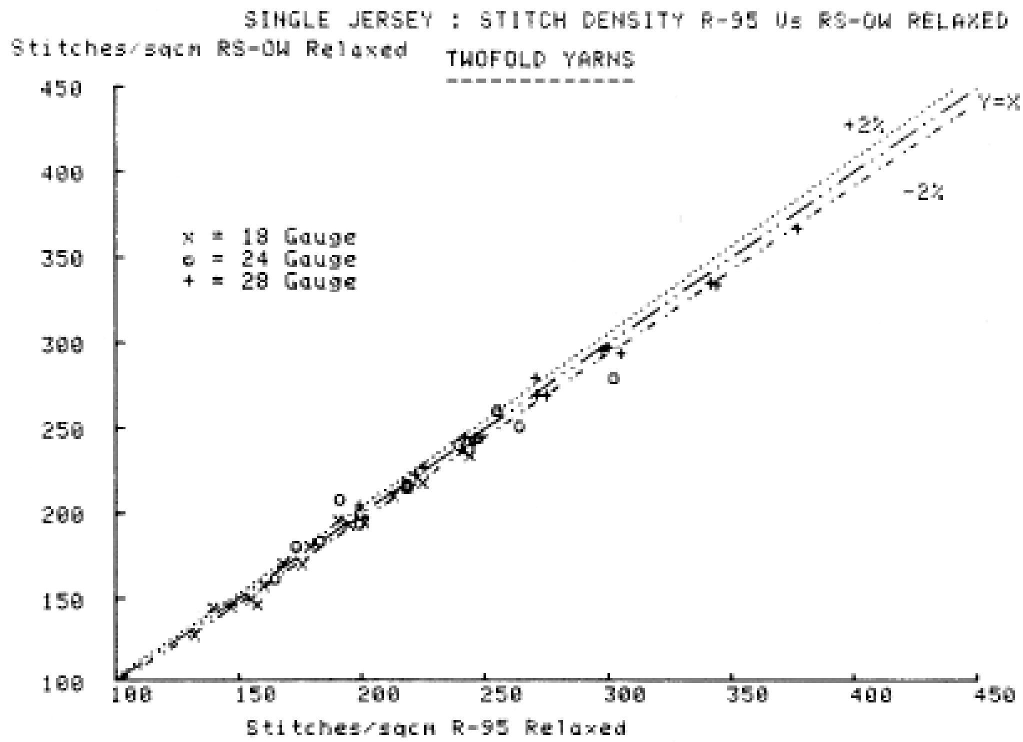
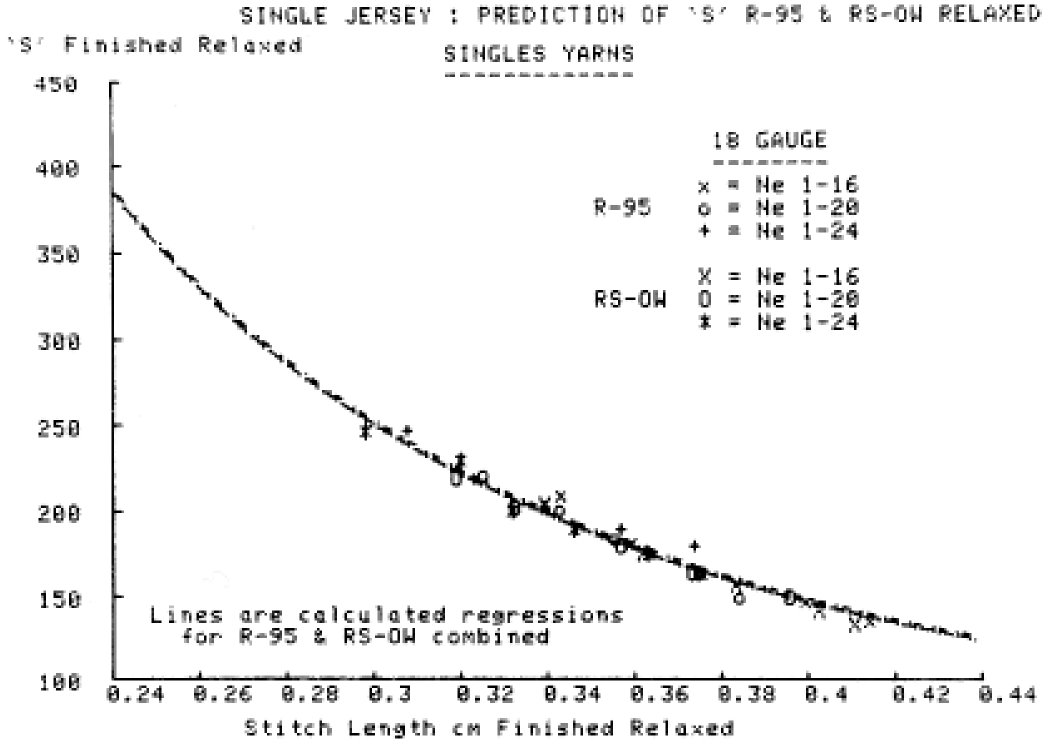

SINGLE JERSEY : STITCH DENSITY R-95 Vs RS-OW RELAXED
Stitches/sqcm RS-OW Relaxed
TWOFOLD YARNS
x = 18 Gauge
o = 24 Gauge
+ = 28 Gauge
+2%
-2%
Y=X
Stitches/sqcm R-95 Relaxed

Figure 34


SINGLE JERSEY : PREDICTION OF 'S' R-95 & RS-OW RELAXED
SINGLES YARNS
'S' Finished Relaxed
18 GAUGE
R-95
x = Ne 1-16
o = Ne 1-20
+ = Ne 1-24
RS-OW
X = Ne 1-16
O = Ne 1-20
✱ = Ne 1-24
Lines are calculated regressions for R-95 & RS-OW combined
450
400
350
300
250
200
150
100
0.24 0.26 0.28 0.3 0.32 0.34 0.36 0.38 0.4 0.42 0.44
Stitch Length cm Finished Relaxed

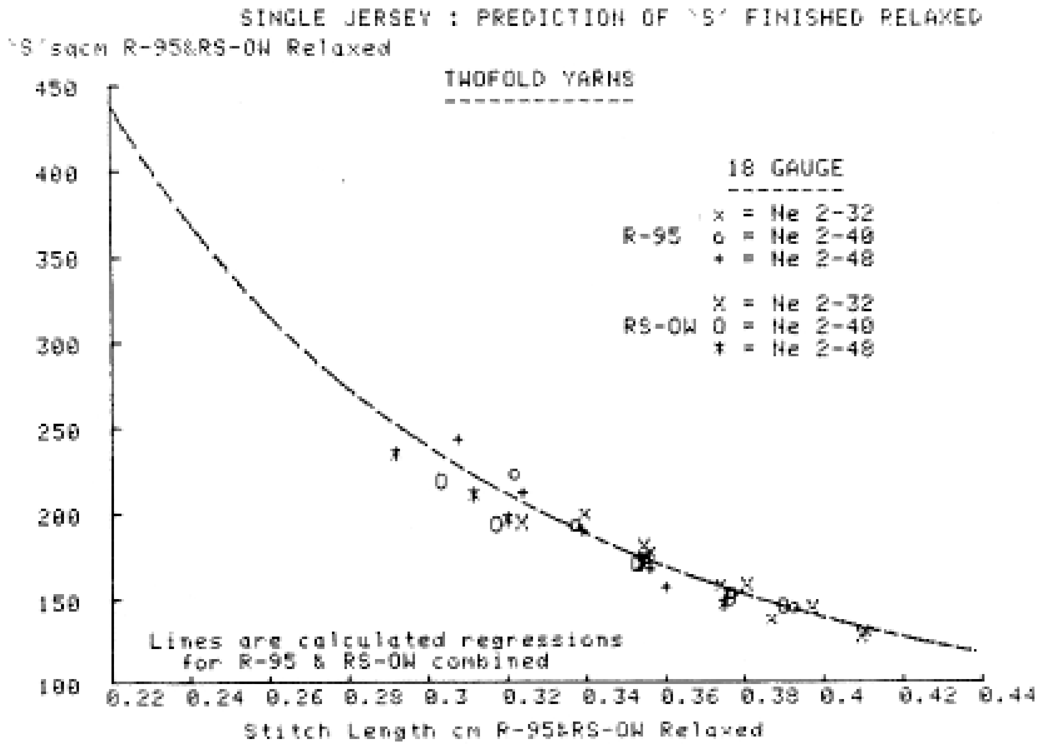
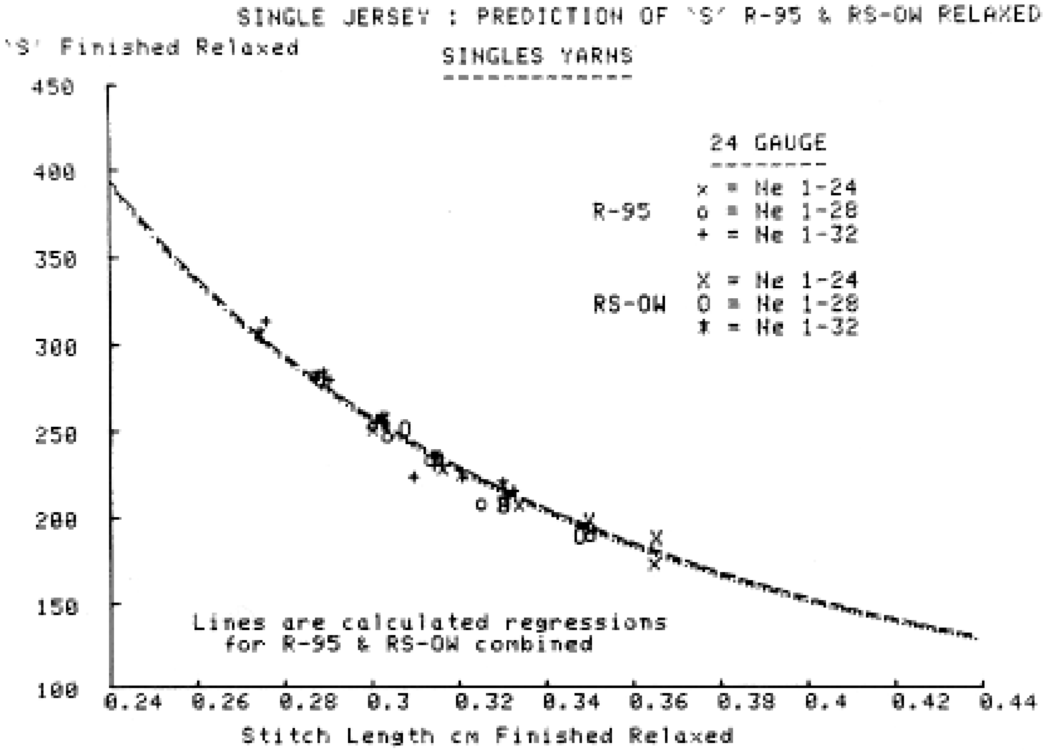
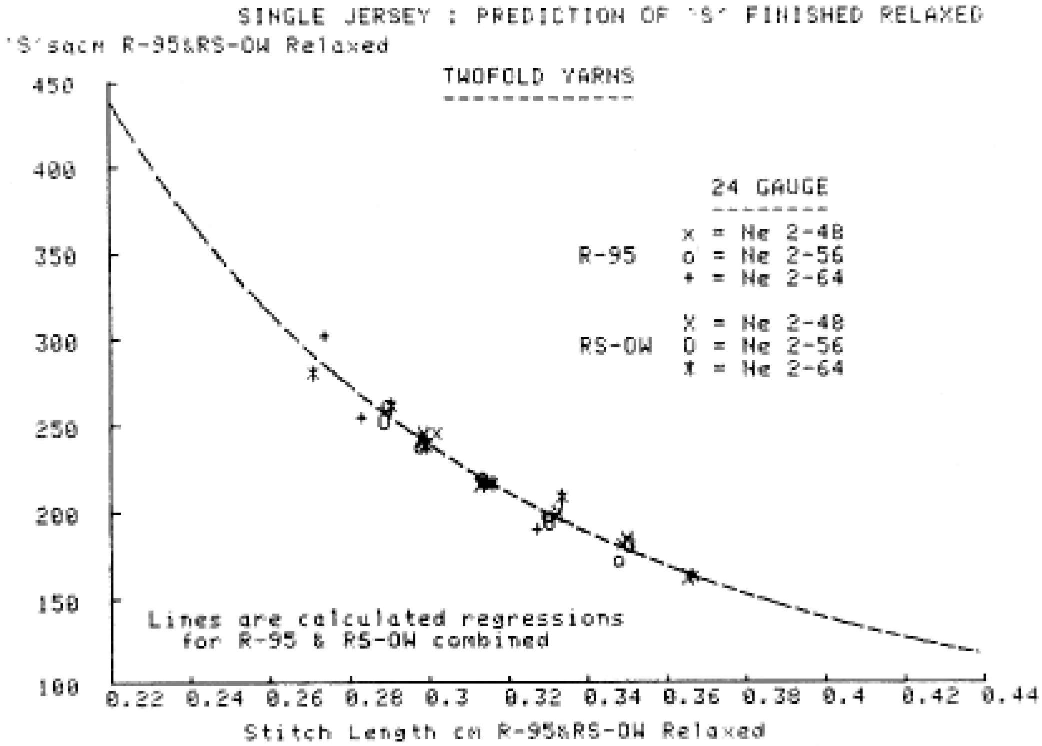

SINGLE JERSEY : PREDICTION OF 'S' FINISHED RELAXED
'S'sqcm R-95&RS-OW Relaxed
TWOFOLD YARNS
18 GAUGE
R-95
x = Ne 2-32
o = Ne 2-40
+ = Ne 2-48
RS-OW
X = Ne 2-32
O = Ne 2-40
✱ = Ne 2-48
Lines are calculated regressions for R-95 & RS-OW combined
450
400
350
300
250
200
150
100
0.22 0.24 0.26 0.28 0.3 0.32 0.34 0.36 0.38 0.4 0.42 0.44
Stitch Length cm R-95&RS-OW Relaxed

Figure 35

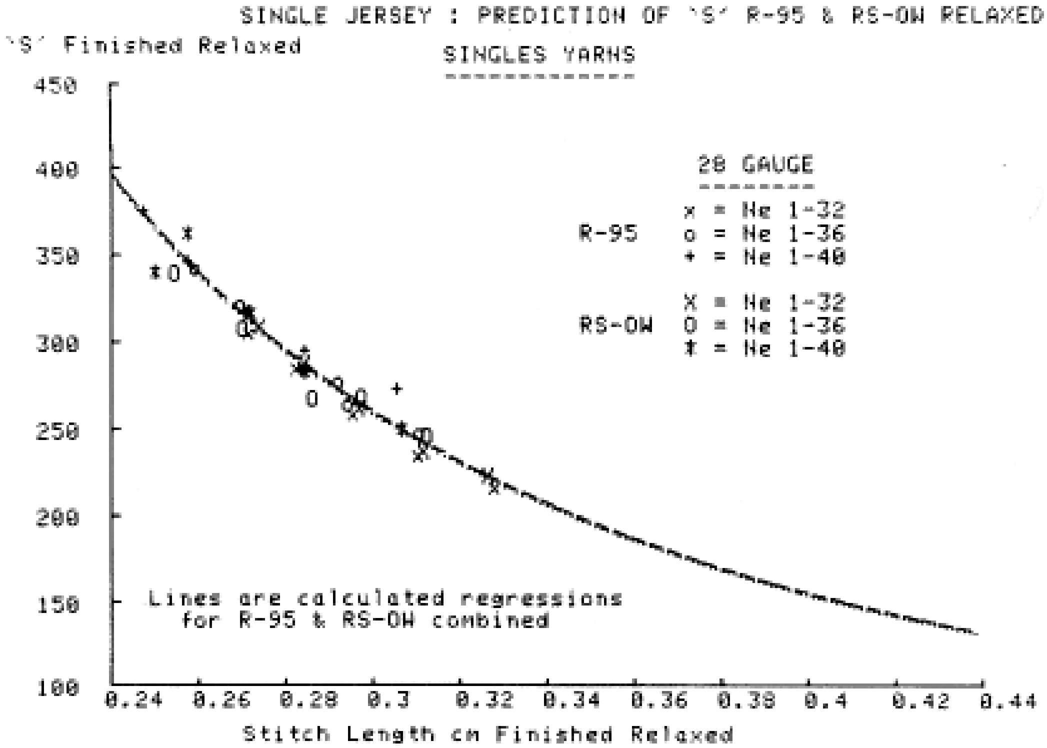


SINGLE JERSEY : PREDICTION OF 'S' R-95 & RS-OW RELAXED
'S' Finished Relaxed
SINGLES YARNS
24 GAUGE
R-95
x = Ne 1-24
o = Ne 1-28
+ = Ne 1-32
RS-OW
X = Ne 1-24
O = Ne 1-28
* = Ne 1-32
Lines are calculated regressions
for R-95 & RS-OW combined
450
400
350
300
250
200
150
100
0.24 0.26 0.28 0.3 0.32 0.34 0.36 0.38 0.4 0.42 0.44
Stitch Length cm Finished Relaxed



SINGLE JERSEY : PREDICTION OF 'S' FINISHED RELAXED
'S'sqcm R-95&RS-OW Relaxed
TWOFOLD YARNS
24 GAUGE
R-95
x = Ne 2-48
o = Ne 2-56
+ = Ne 2-64
RS-OW
X = Ne 2-48
O = Ne 2-56
* = Ne 2-64
Lines are calculated regressions
for R-95 & RS-OW combined
450
400
350
300
250
200
150
100
0.22 0.24 0.26 0.28 0.3 0.32 0.34 0.36 0.38 0.4 0.42 0.44
Stitch Length cm R-95&RS-OW Relaxed

Figure 36


SINGLE JERSEY : PREDICTION OF `S´ R-95 & RS-OW RELAXED
SINGLES YARNS
`S´ Finished Relaxed
28 GAUGE
R-95 x = Ne 1-32
o = Ne 1-36
+ = Ne 1-40
RS-OW X = Ne 1-32
O = Ne 1-36
* = Ne 1-40
Lines are calculated regressions
for R-95 & RS-OW combined
450
400
350
300
250
200
150
100
0.24 0.26 0.28 0.3 0.32 0.34 0.36 0.38 0.4 0.42 0.44
Stitch Length cm Finished Relaxed

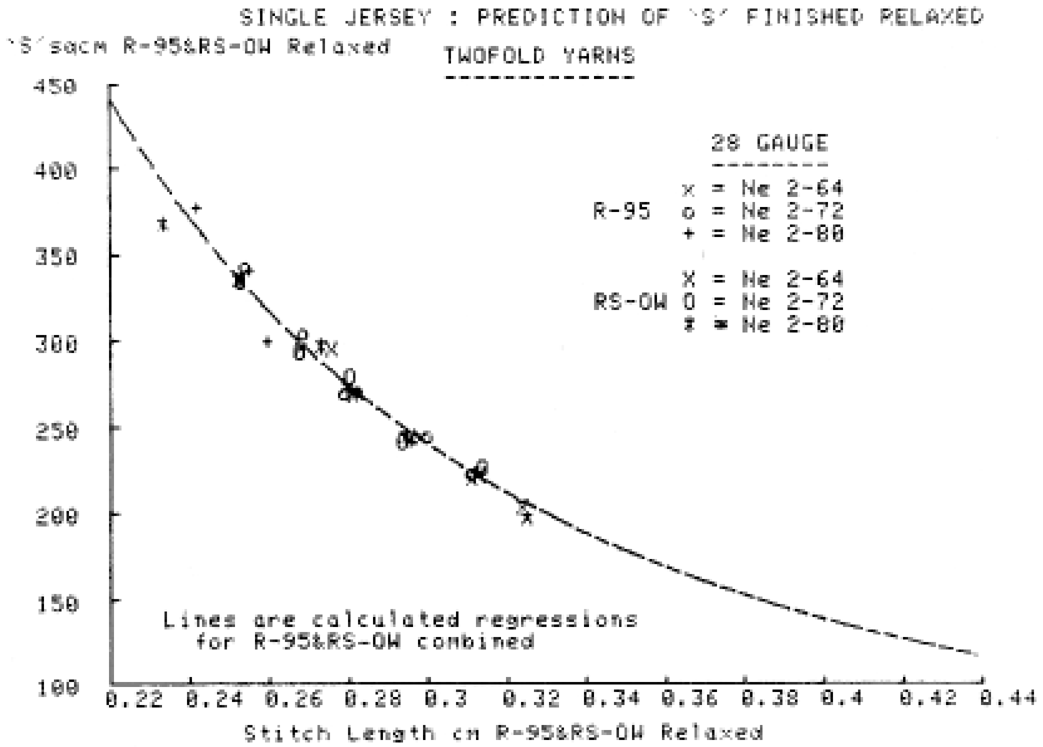
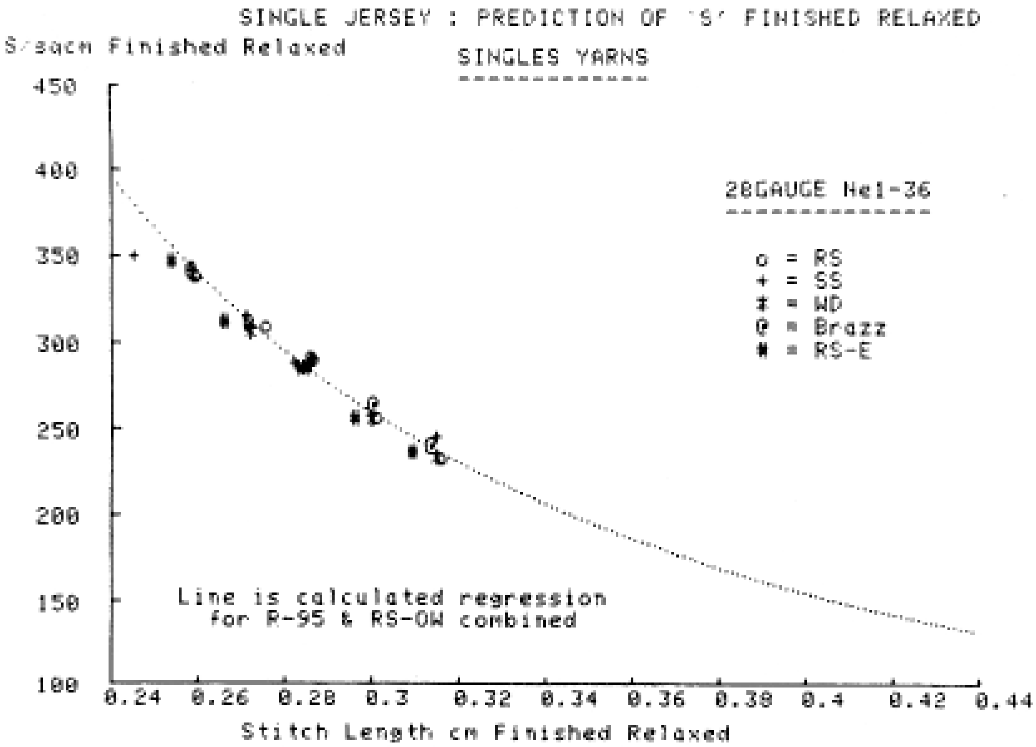

SINGLE JERSEY : PREDICTION OF `S´ FINISHED RELAXED
TWOFOLD YARNS
`S´sqcm R-95&RS-OW Relaxed
28 GAUGE
R-95 x = Ne 2-64
o = Ne 2-72
+ = Ne 2-80
RS-OW X = Ne 2-64
O = Ne 2-72
* = Ne 2-80
Lines are calculated regressions
for R-95&RS-OW combined
450
400
350
300
250
200
150
100
0.22 0.24 0.26 0.28 0.3 0.32 0.34 0.36 0.38 0.4 0.42 0.44
Stitch Length cm R-95&RS-OW Relaxed

Figure 37


SINGLE JERSEY : PREDICTION OF 'S' FINISHED RELAXED
S/sqcm Finished Relaxed
SINGLES YARNS
28GAUGE Ne1-36
o = RS
+ = SS
‡ = WD
@ = Brazz
# = RS-E
Line is calculated regression
for R-95 & RS-OW combined
Stitch Length cm Finished Relaxed

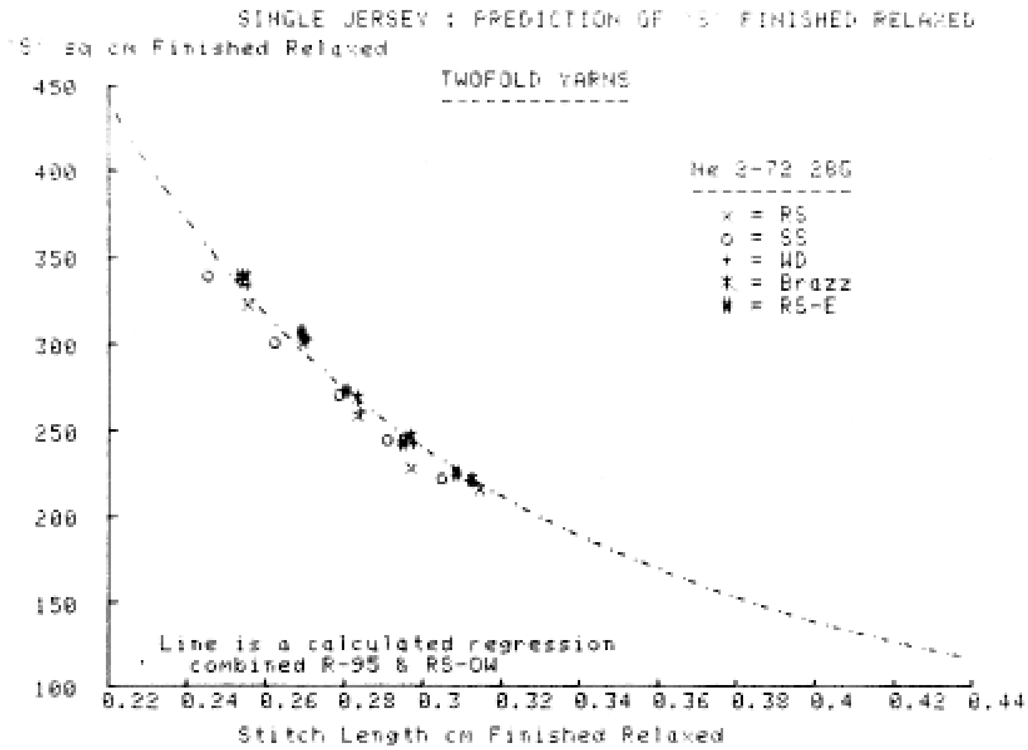
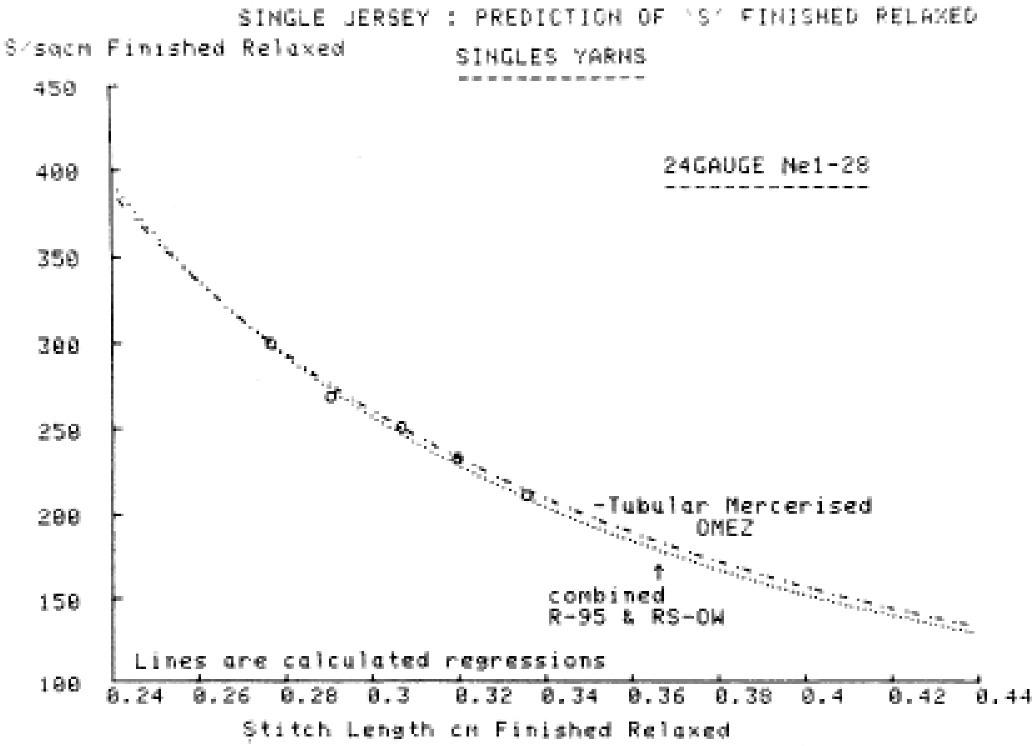

SINGLE JERSEY : PREDICTION OF 'S' FINISHED RELAXED
'S' sq cm Finished Relaxed
TWOFOLD YARNS
Ne 2-72 28G
x = RS
o = SS
+ = WD
‡ = Brazz
# = RS-E
Line is a calculated regression
combined R-95 & RS-OW
Stitch Length cm Finished Relaxed

Figure 38


SINGLE JERSEY : PREDICTION OF 'S' FINISHED RELAXED
S/sqcm Finished Relaxed
SINGLES YARNS
24GAUGE Ne1-28
-Tubular Mercerised OMEZ
combined R-95 & RS-OW
Lines are calculated regressions
Stitch Length cm Finished Relaxed
450
400
350
300
250
200
150
100
0.24
0.26
0.28
0.3
0.32
0.34
0.36
0.38
0.4
0.42
0.44

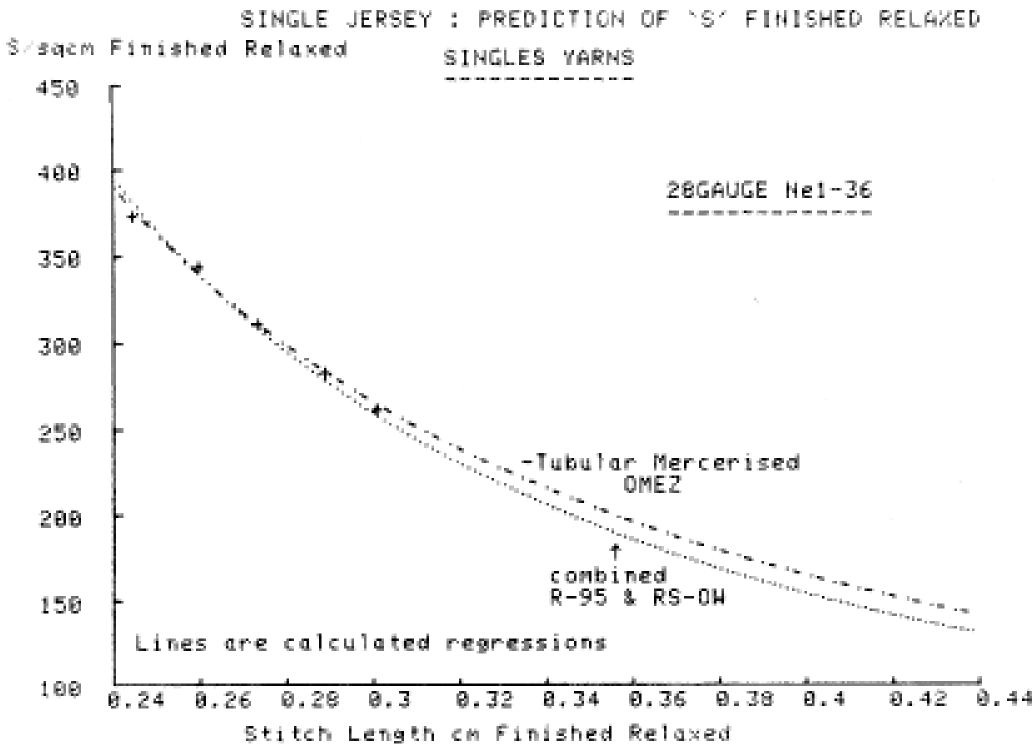
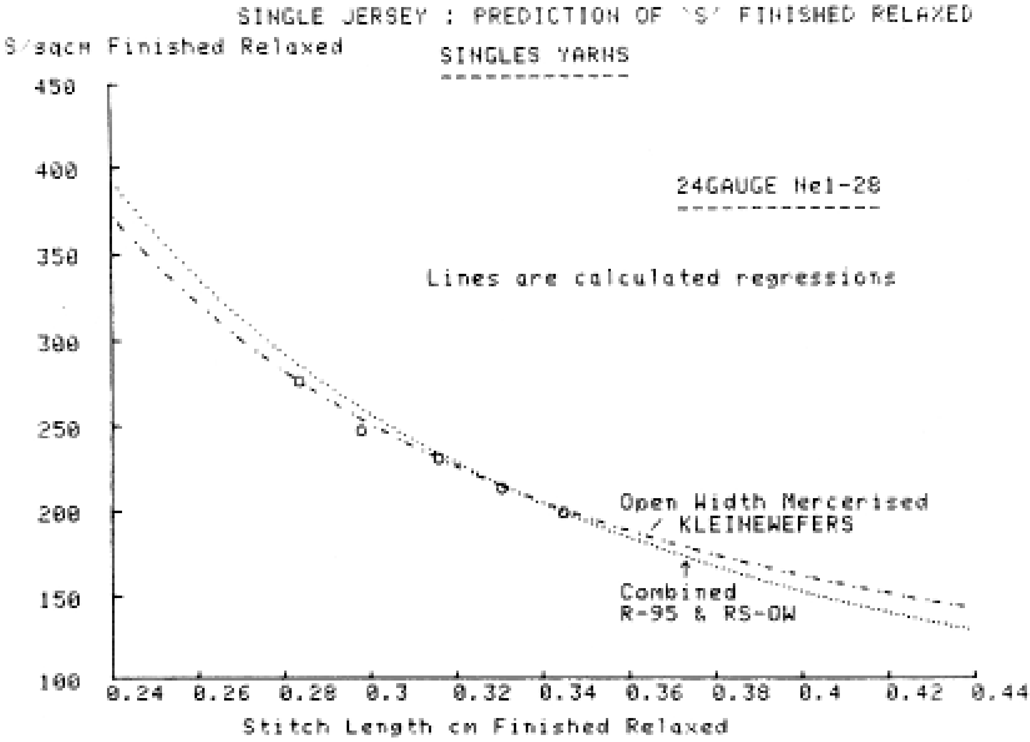

SINGLE JERSEY : PREDICTION OF 'S' FINISHED RELAXED
S/sqcm Finished Relaxed
SINGLES YARNS
28GAUGE Ne1-36
-Tubular Mercerised OMEZ
combined R-95 & RS-OW
Lines are calculated regressions
Stitch Length cm Finished Relaxed
450
400
350
300
250
200
150
100
0.24
0.26
0.28
0.3
0.32
0.34
0.36
0.38
0.4
0.42
0.44

Figure 39


SINGLE JERSEY : PREDICTION OF 'S' FINISHED RELAXED
S/sqcm Finished Relaxed
SINGLES YARNS
450
400
350
300
250
200
150
100
24GAUGE Ne1-28
Lines are calculated regressions
Open Width Mercerised / KLEINEWEFERS
Combined R-95 & RS-OW
0.24 0.26 0.28 0.3 0.32 0.34 0.36 0.38 0.4 0.42 0.44
Stitch Length cm Finished Relaxed

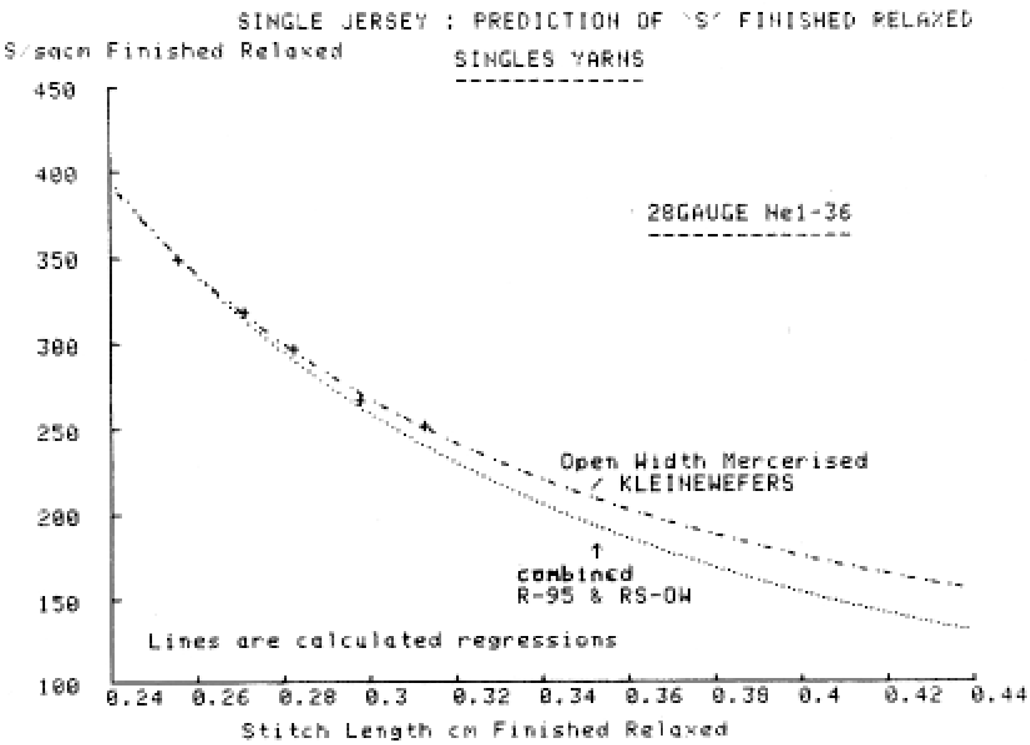
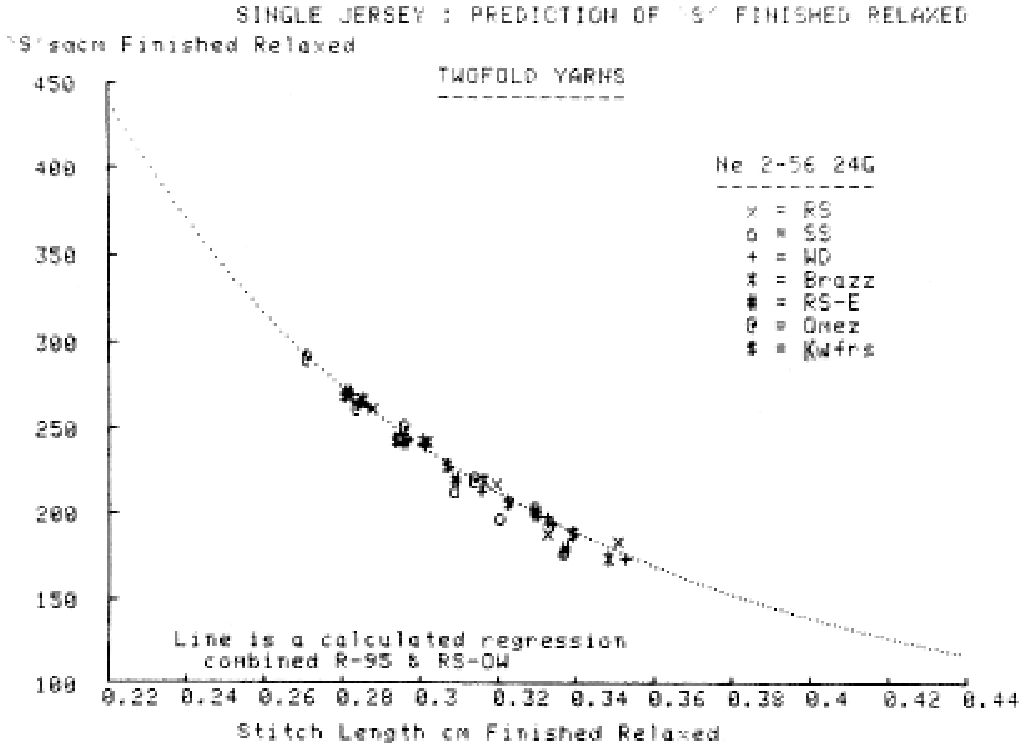
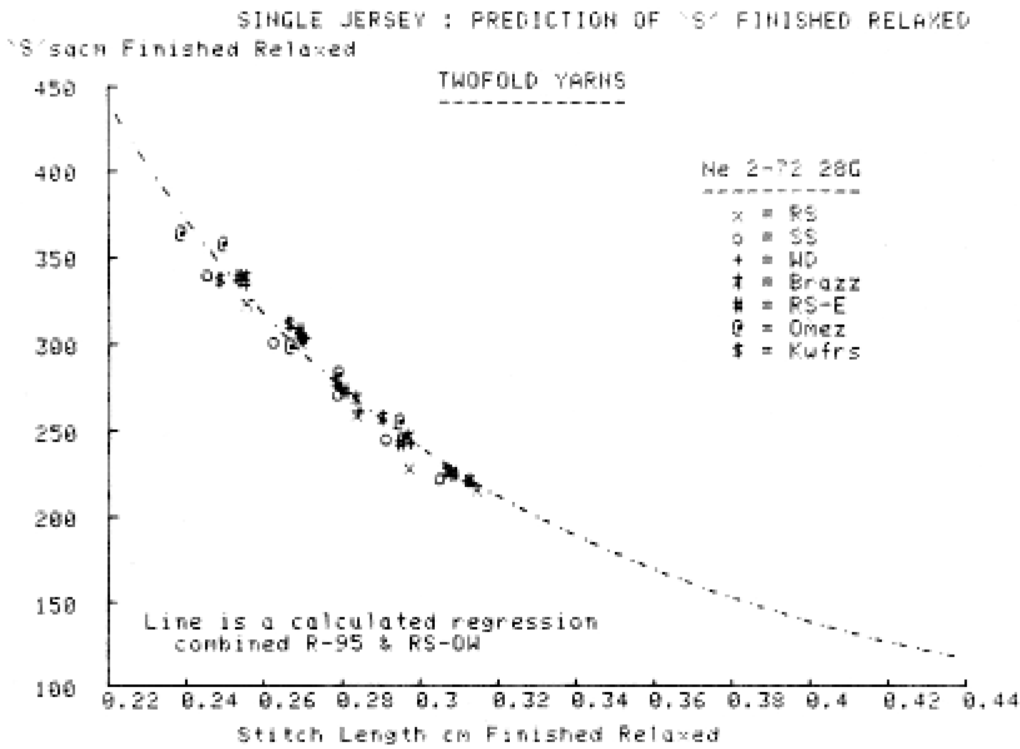

SINGLE JERSEY : PREDICTION OF 'S' FINISHED RELAXED
S/sqcm Finished Relaxed
SINGLES YARNS
450
400
350
300
250
200
150
100
28GAUGE Ne1-36
Open Width Mercerised / KLEINEWEFERS
combined R-95 & RS-OW
Lines are calculated regressions
0.24 0.26 0.28 0.3 0.32 0.34 0.36 0.38 0.4 0.42 0.44
Stitch Length cm Finished Relaxed

Figure 40

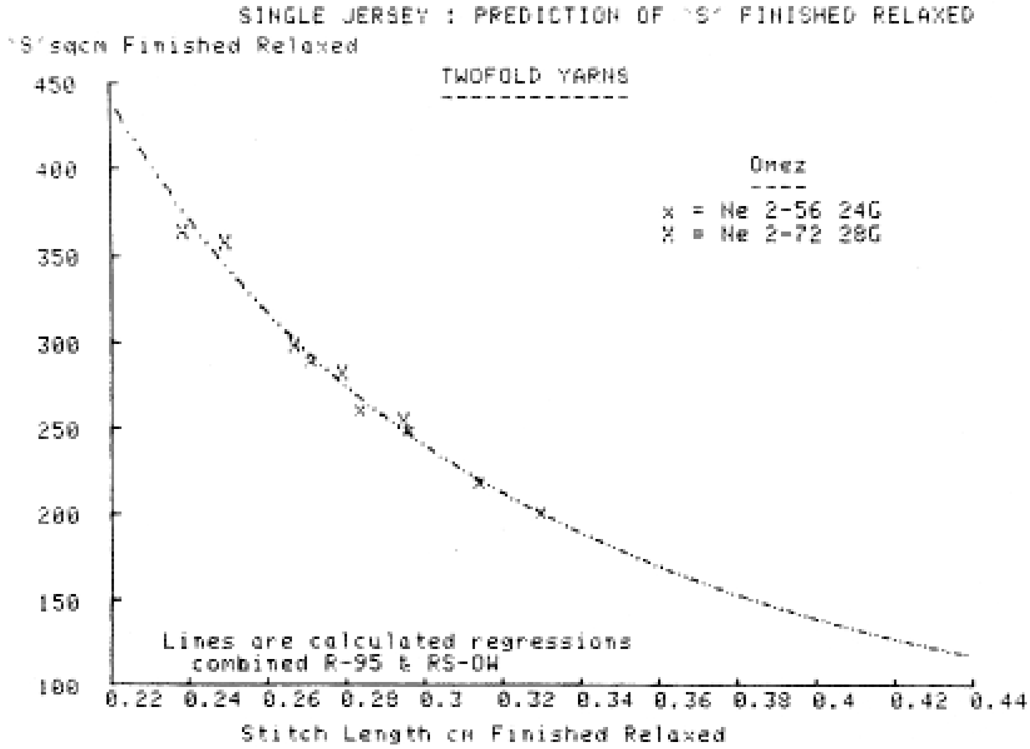


SINGLE JERSEY : PREDICTION OF 'S' FINISHED RELAXED
'S' sqcm Finished Relaxed
TWOFOLD YARNS
Ne 2-56 24G
x = RS
o = SS
+ = WD
‡ = Brazz
# = RS-E
@ = Omez
$ = Kwfrs
Line is a calculated regression combined R-95 & RS-OW
Stitch Length cm Finished Relaxed



SINGLE JERSEY : PREDICTION OF 'S' FINISHED RELAXED
'S' sqcm Finished Relaxed
TWOFOLD YARNS
Ne 2-72 28G
x = RS
o = SS
+ = WD
‡ = Brazz
# = RS-E
@ = Omez
$ = Kwfrs
Line is a calculated regression combined R-95 & RS-OW
Stitch Length cm Finished Relaxed

Figure 41


SINGLE JERSEY : PREDICTION OF 'S' FINISHED RELAXED
'S' sqcm Finished Relaxed
TWOFOLD YARNS
Omez
x = Ne 2-56 24G
X = Ne 2-72 28G
450
400
350
300
250
200
150
100
Lines are calculated regressions
combined R-95 & RS-OW
0.22 0.24 0.26 0.28 0.3 0.32 0.34 0.36 0.38 0.4 0.42 0.44
Stitch Length cm Finished Relaxed

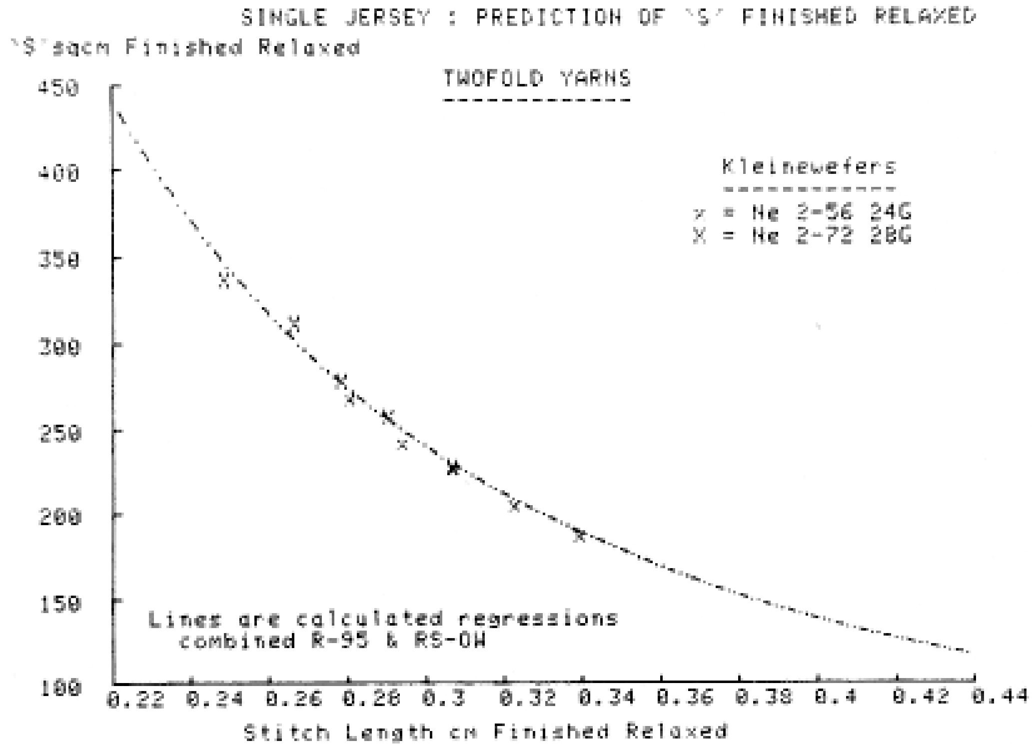
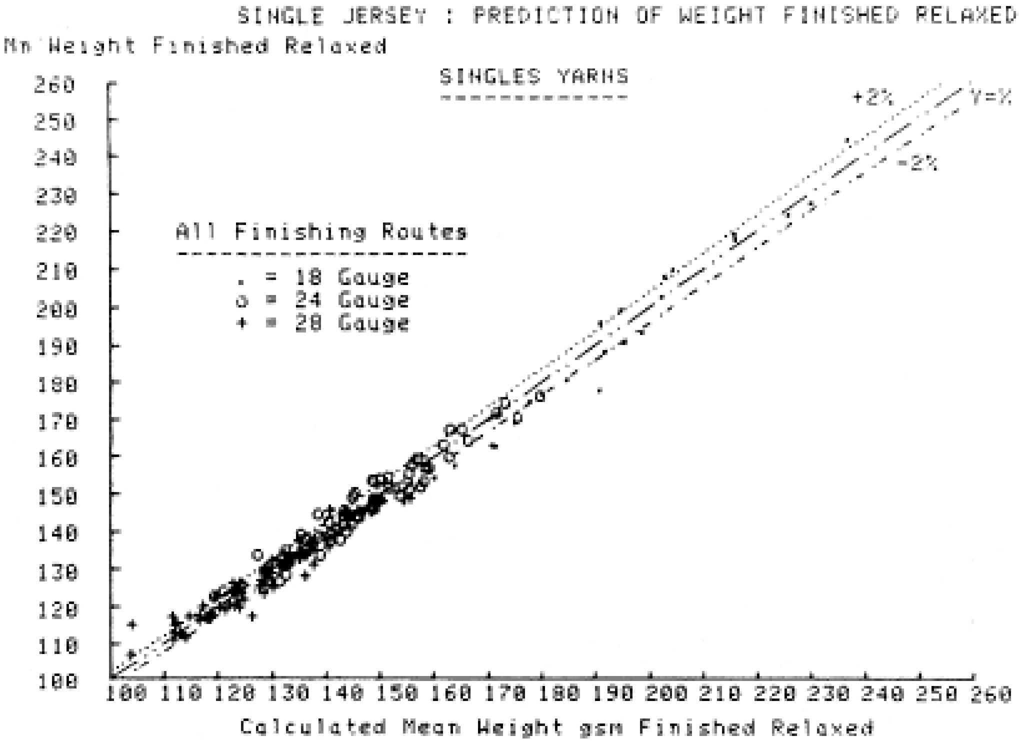

SINGLE JERSEY : PREDICTION OF 'S' FINISHED RELAXED
'S' sqcm Finished Relaxed
TWOFOLD YARNS
Kleinewefers
x = Ne 2-56 24G
X = Ne 2-72 28G
450
400
350
300
250
200
150
100
Lines are calculated regressions
combined R-95 & RS-OW
0.22 0.24 0.26 0.28 0.3 0.32 0.34 0.36 0.38 0.4 0.42 0.44
Stitch Length cm Finished Relaxed

Figure 42


SINGLE JERSEY : PREDICTION OF WEIGHT FINISHED RELAXED
Mn Weight Finished Relaxed
SINGLES YARNS
All Finishing Routes
. = 18 Gauge
o = 24 Gauge
+ = 28 Gauge
+2%
Y=X
-2%
Calculated Mean Weight gsm Finished Relaxed

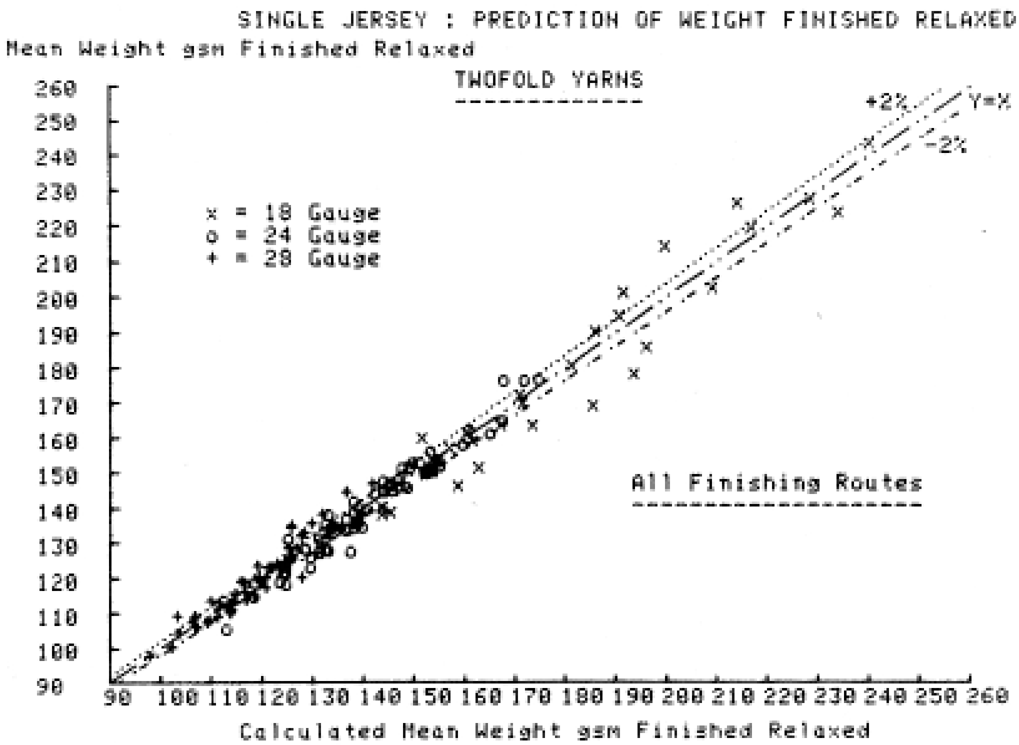
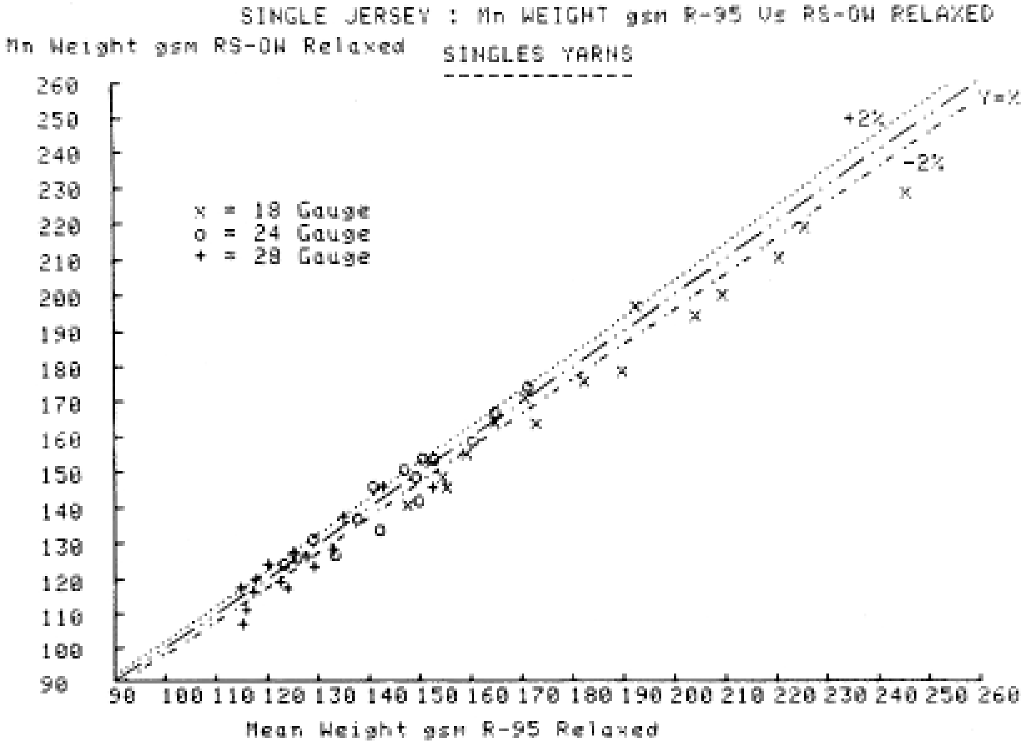

SINGLE JERSEY : PREDICTION OF WEIGHT FINISHED RELAXED
Mean Weight gsm Finished Relaxed
TWOFOLD YARNS
x = 18 Gauge
o = 24 Gauge
+ = 28 Gauge
+2%
Y=X
-2%
All Finishing Routes
Calculated Mean Weight gsm Finished Relaxed

Figure 43


SINGLE JERSEY : Mn WEIGHT gsm R-95 Vs RS-OW RELAXED
Mn Weight gsm RS-OW Relaxed
SINGLES YARNS
x = 18 Gauge
o = 24 Gauge
+ = 28 Gauge
+2%
-2%
Y=X
Mean Weight gsm R-95 Relaxed

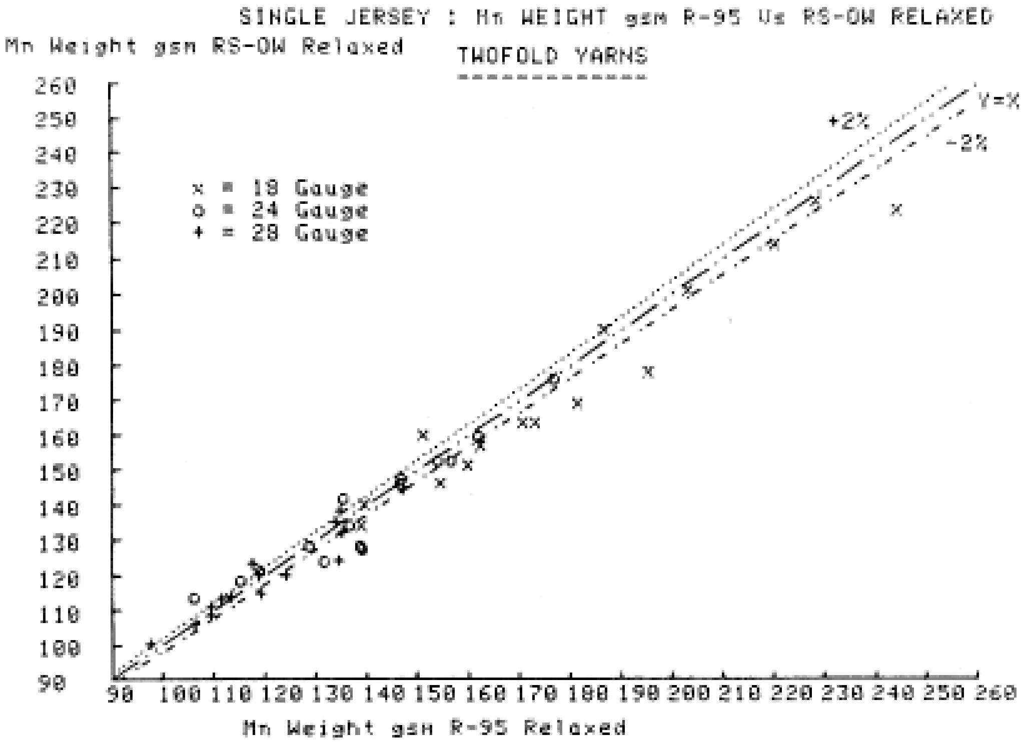
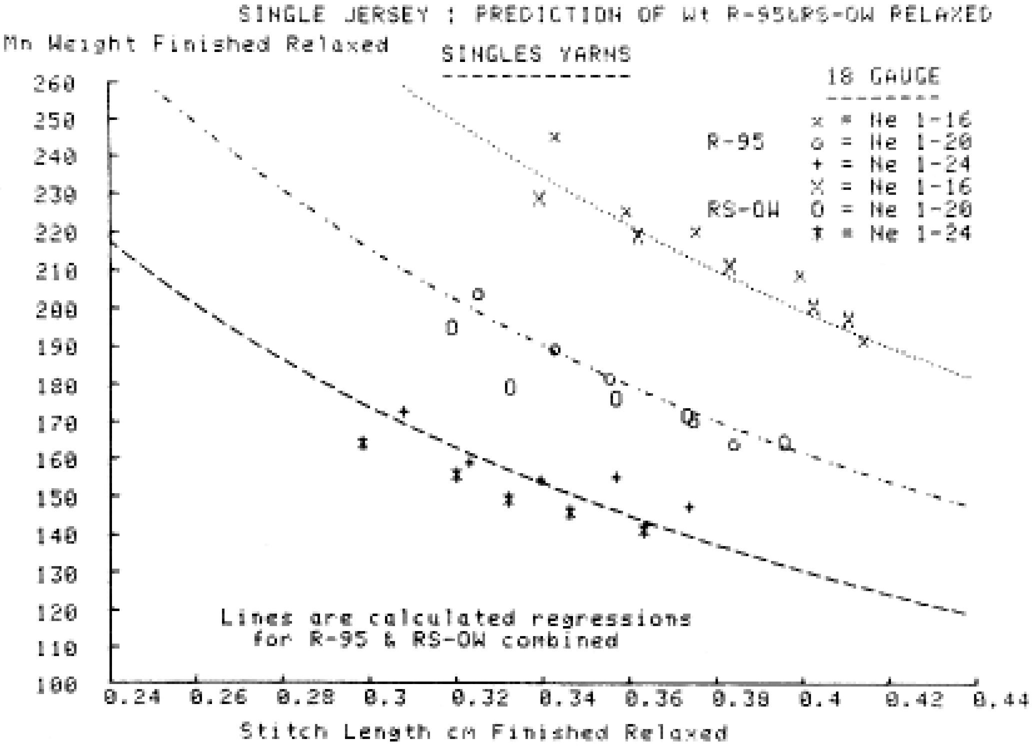

SINGLE JERSEY : Mn WEIGHT gsm R-95 Vs RS-OW RELAXED
Mn Weight gsm RS-OW Relaxed
TWOFOLD YARNS
x = 18 Gauge
o = 24 Gauge
+ = 28 Gauge
+2%
-2%
Y=X
Mn Weight gsm R-95 Relaxed

Figure 44


SINGLE JERSEY : PREDICTION OF Wt R-95&RS-OW RELAXED
Mn Weight Finished Relaxed
SINGLES YARNS
18 GAUGE
x = Ne 1-16
o = Ne 1-20
+ = Ne 1-24
X = Ne 1-16
O = Ne 1-20
ŧ = Ne 1-24
R-95
RS-OW
Lines are calculated regressions
for R-95 & RS-OW combined
Stitch Length cm Finished Relaxed
260
250
240
230
220
210
200
190
180
170
160
150
140
130
120
110
100
0.24
0.26
0.28
0.3
0.32
0.34
0.36
0.38
0.4
0.42
0.44

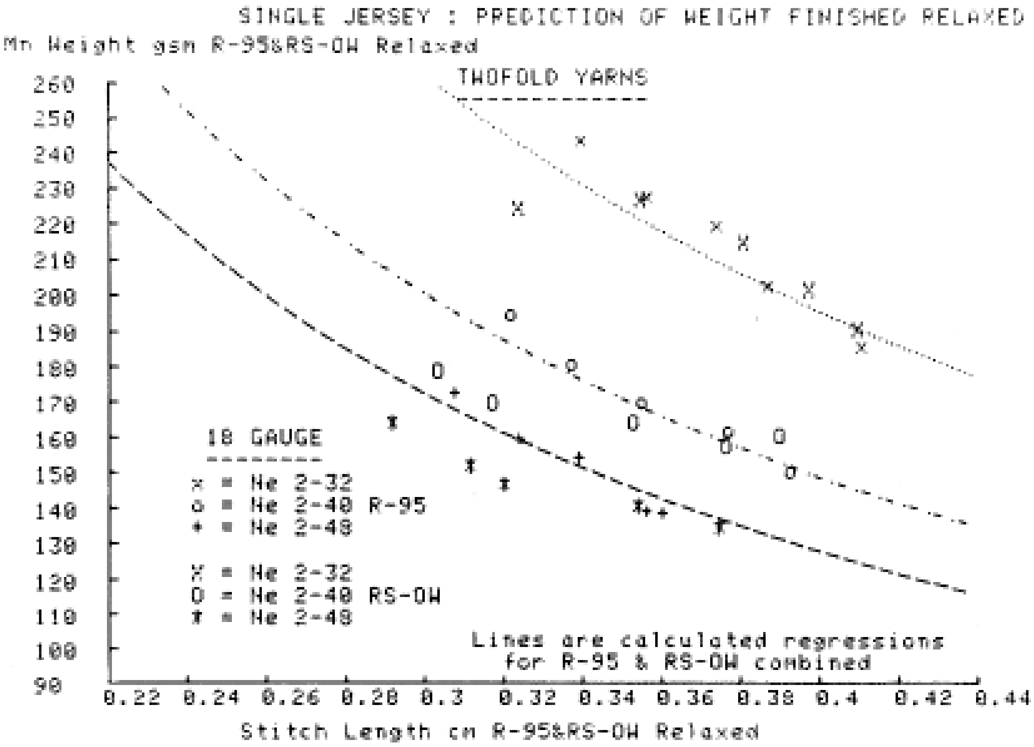
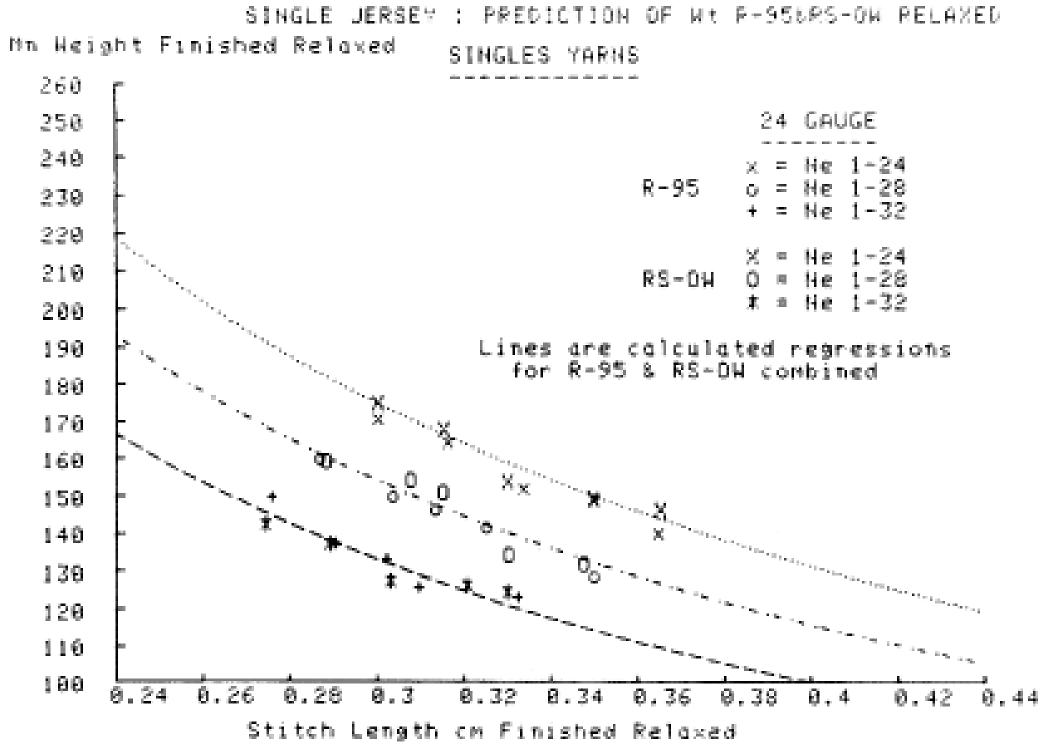

SINGLE JERSEY : PREDICTION OF WEIGHT FINISHED RELAXED
Mn Weight gsm R-95&RS-OW Relaxed
TWOFOLD YARNS
18 GAUGE
x = Ne 2-32
o = Ne 2-40 R-95
+ = Ne 2-48
X = Ne 2-32
O = Ne 2-40 RS-OW
ŧ = Ne 2-48
Lines are calculated regressions
for R-95 & RS-OW combined
Stitch Length cm R-95&RS-OW Relaxed
260
250
240
230
220
210
200
190
180
170
160
150
140
130
120
110
100
90
0.22
0.24
0.26
0.28
0.3
0.32
0.34
0.36
0.38
0.4
0.42
0.44

Figure 45


SINGLE JERSEY : PREDICTION OF Wt R-95&RS-OW RELAXED
Mn Weight Finished Relaxed
SINGLES YARNS
24 GAUGE
R-95
x = Ne 1-24
o = Ne 1-28
+ = Ne 1-32
RS-OW
X = Ne 1-24
O = Ne 1-28
ǂ = Ne 1-32
Lines are calculated regressions
for R-95 & RS-OW combined
Stitch Length cm Finished Relaxed

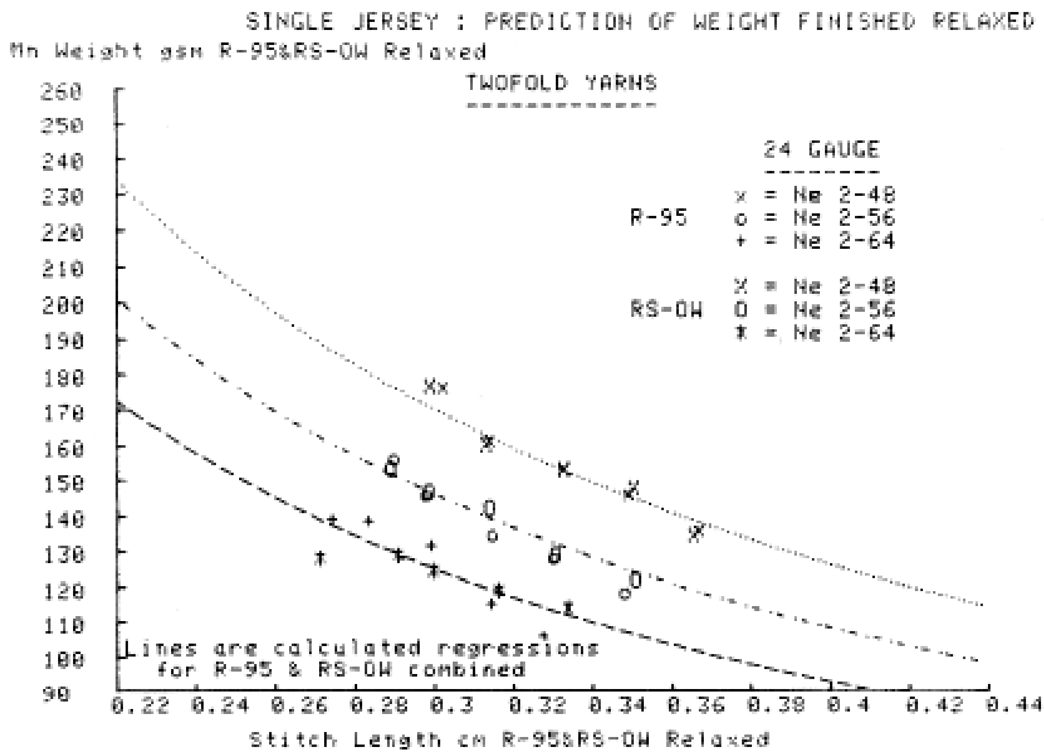
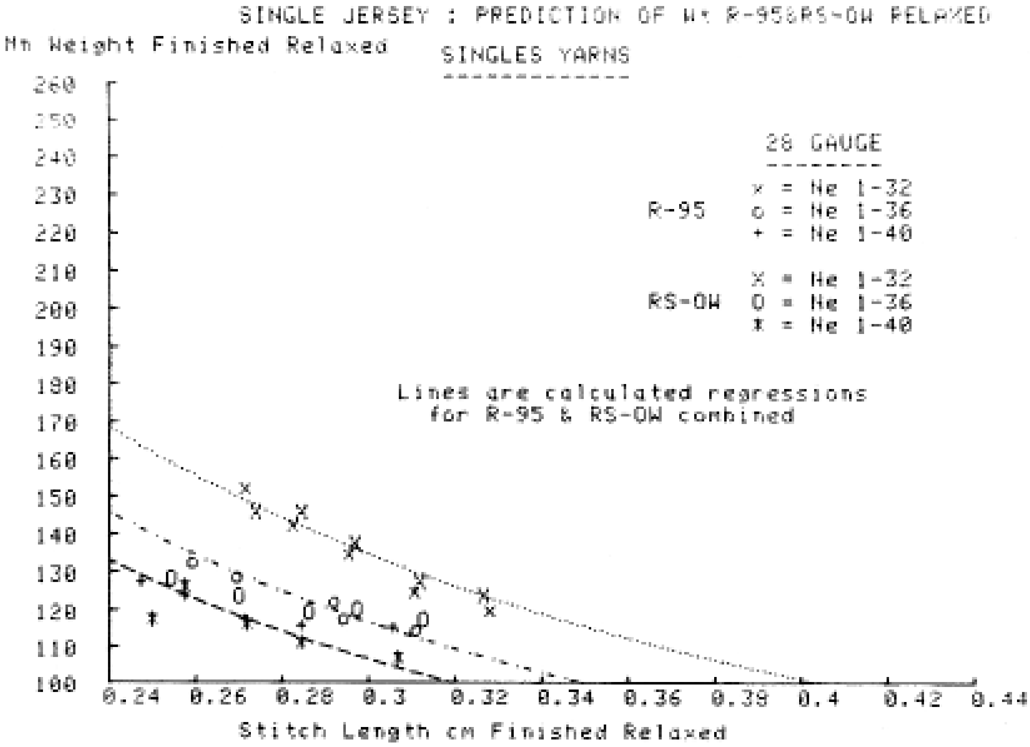

SINGLE JERSEY : PREDICTION OF WEIGHT FINISHED RELAXED
Mn Weight gsm R-95&RS-OW Relaxed
TWOFOLD YARNS
24 GAUGE
R-95
x = Ne 2-48
o = Ne 2-56
+ = Ne 2-64
RS-OW
X = Ne 2-48
O = Ne 2-56
ǂ = Ne 2-64
Lines are calculated regressions
for R-95 & RS-OW combined
Stitch Length cm R-95&RS-OW Relaxed

Figure 46


SINGLE JERSEY : PREDICTION OF Wt R-95&RS-OW RELAXED
Mn Weight Finished Relaxed
SINGLES YARNS
28 GAUGE
R-95 x = Ne 1-32 o = Ne 1-36 + = Ne 1-40
RS-OW X = Ne 1-32 O = Ne 1-36 * = Ne 1-40
Lines are calculated regressions for R-95 & RS-OW combined
Stitch Length cm Finished Relaxed

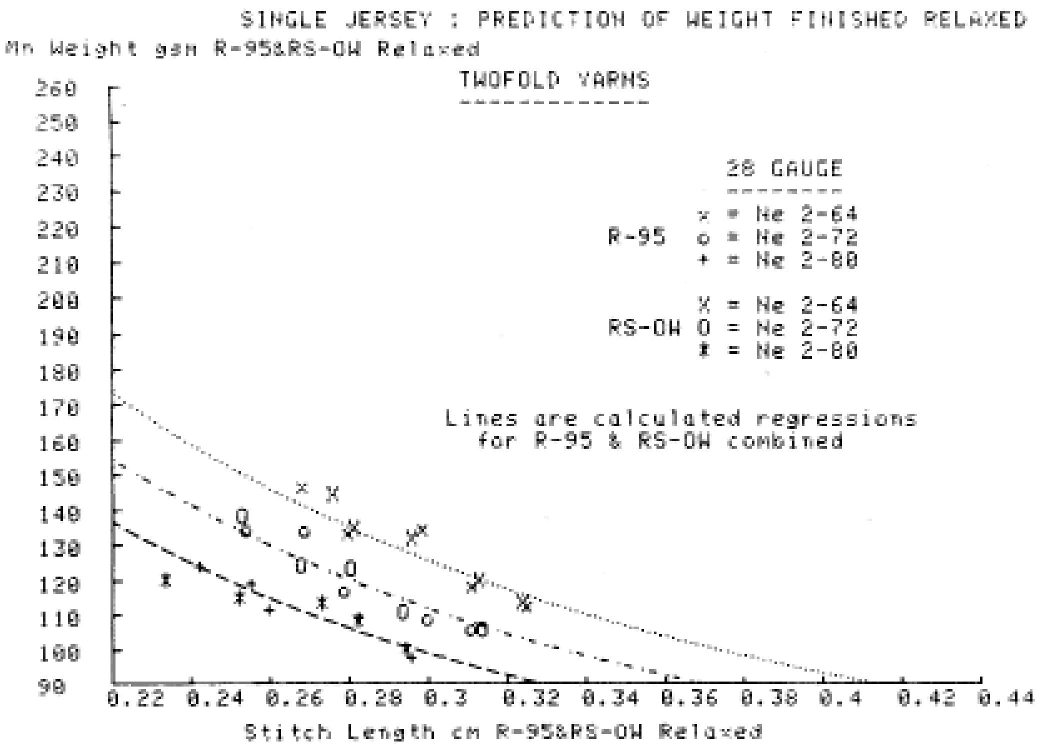
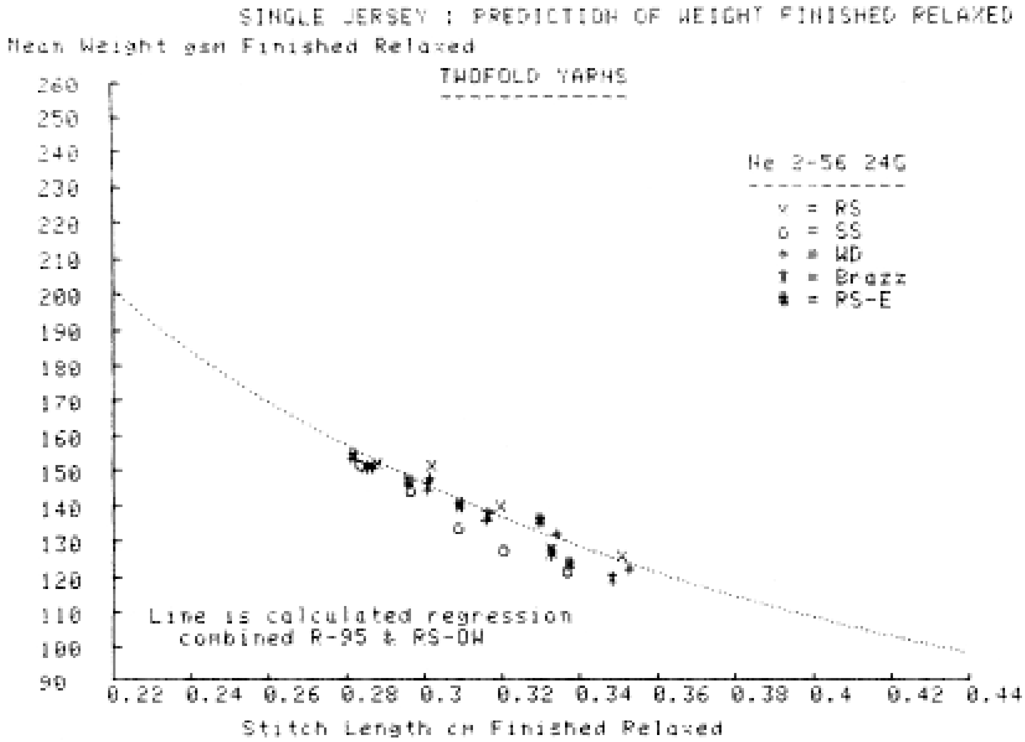

SINGLE JERSEY : PREDICTION OF WEIGHT FINISHED RELAXED
Mn Weight gsm R-95&RS-OW Relaxed
TWOFOLD YARNS
28 GAUGE
R-95 x = Ne 2-64 o = Ne 2-72 + = Ne 2-80
RS-OW X = Ne 2-64 O = Ne 2-72 * = Ne 2-80
Lines are calculated regressions for R-95 & RS-OW combined
Stitch Length cm R-95&RS-OW Relaxed

Figure 47


SINGLE JERSEY : PREDICTION OF WEIGHT FINISHED RELAXED
Mean Weight gsm Finished Relaxed
TWOFOLD YARNS
Ne 2-56 24G
x = RS
o = SS
+ = WD
Brazz
RS-E
Line is calculated regression combined R-95 & RS-OW
260 250 240 230 220 210 200 190 180 170 160 150 140 130 120 110 100 90
0.22 0.24 0.26 0.28 0.3 0.32 0.34 0.36 0.38 0.4 0.42 0.44
Stitch Length cm Finished Relaxed

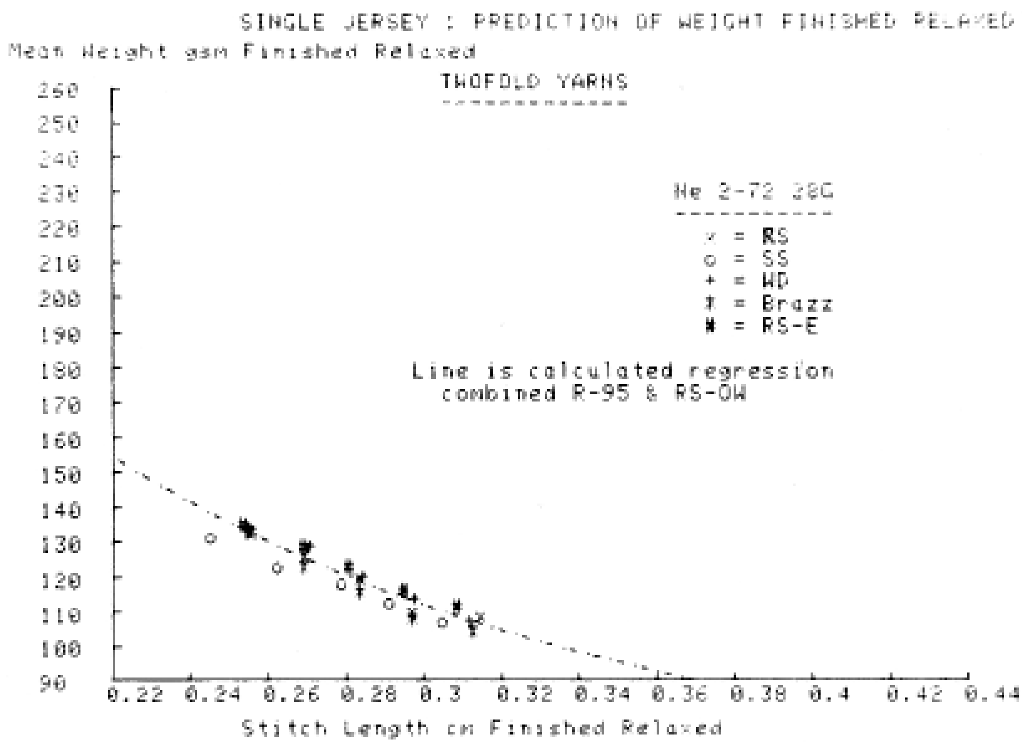
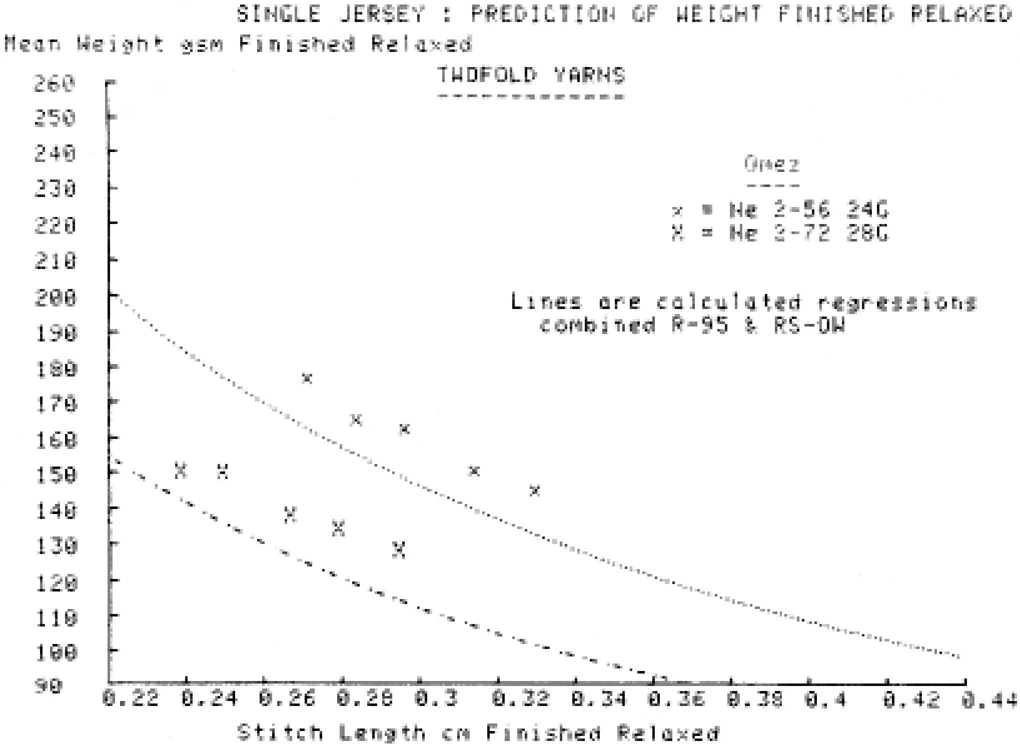
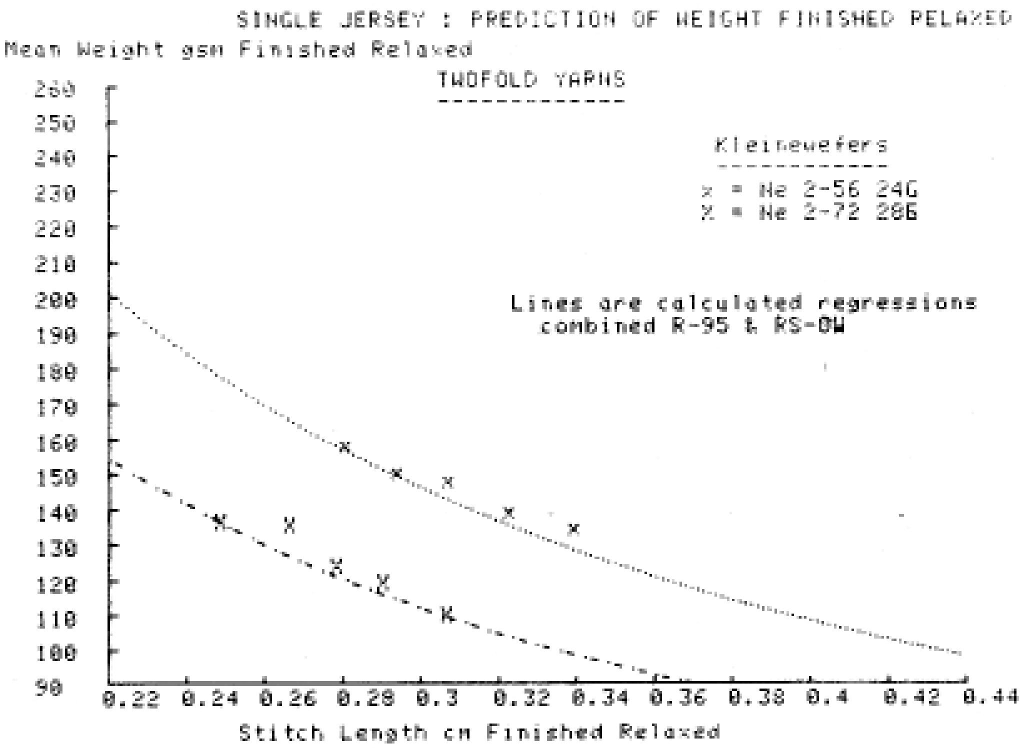

SINGLE JERSEY : PREDICTION OF WEIGHT FINISHED RELAXED
Mean Weight gsm Finished Relaxed
TWOFOLD YARNS
Ne 2-72 28G
x = RS
o = SS
+ = WD
Brazz
RS-E
Line is calculated regression combined R-95 & RS-OW
260 250 240 230 220 210 200 190 180 170 160 150 140 130 120 110 100 90
0.22 0.24 0.26 0.28 0.3 0.32 0.34 0.36 0.38 0.4 0.42 0.44
Stitch Length cm Finished Relaxed

Figure 48

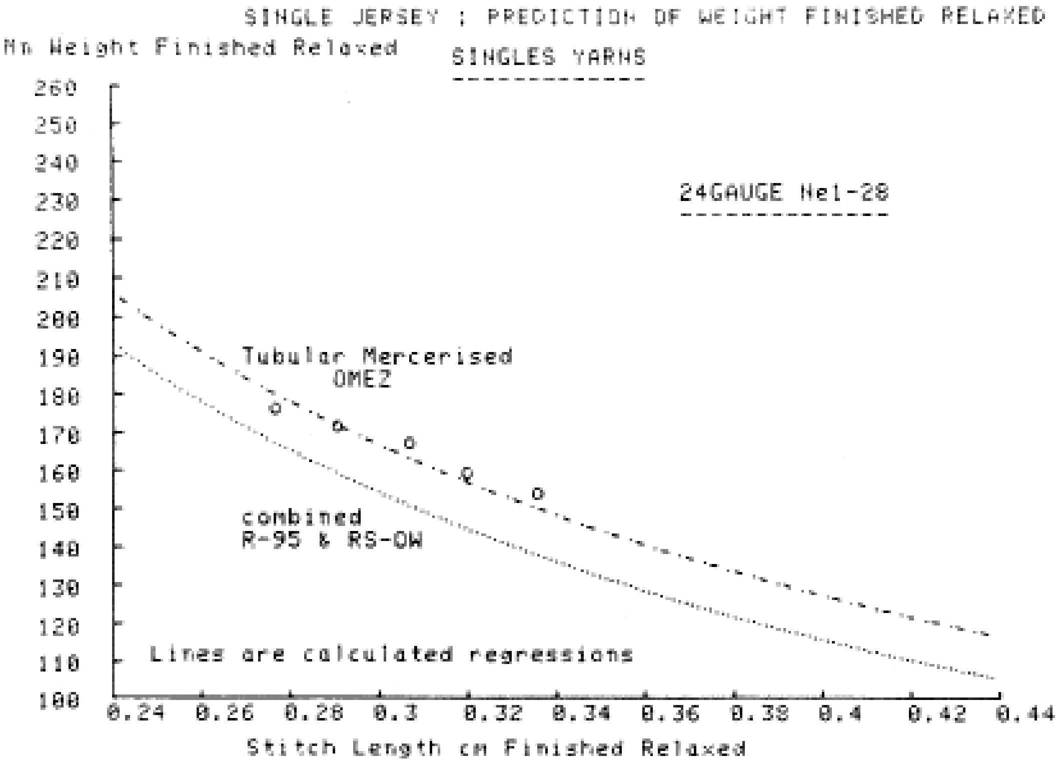


SINGLE JERSEY : PREDICTION OF WEIGHT FINISHED RELAXED
Mean Weight gsm Finished Relaxed
TWOFOLD YARNS
Omez
x = Ne 2-56 24G
X = Ne 2-72 28G
Lines are calculated regressions
combined R-95 & RS-OW
260
250
240
230
220
210
200
190
180
170
160
150
140
130
120
110
100
90
0.22 0.24 0.26 0.28 0.3 0.32 0.34 0.36 0.38 0.4 0.42 0.44
Stitch Length cm Finished Relaxed



SINGLE JERSEY : PREDICTION OF WEIGHT FINISHED RELAXED
Mean Weight gsm Finished Relaxed
TWOFOLD YARNS
Kleinewefers
x = Ne 2-56 24G
X = Ne 2-72 28G
Lines are calculated regressions
combined R-95 & RS-OW
260
250
240
230
220
210
200
190
180
170
160
150
140
130
120
110
100
90
0.22 0.24 0.26 0.28 0.3 0.32 0.34 0.36 0.38 0.4 0.42 0.44
Stitch Length cm Finished Relaxed

Figure 49


SINGLE JERSEY : PREDICTION OF WEIGHT FINISHED RELAXED
Mn Weight Finished Relaxed
SINGLES YARNS
24GAUGE Ne1-28
Tubular Mercerised OMEZ
combined R-95 & RS-OW
Lines are calculated regressions
260
250
240
230
220
210
200
190
180
170
160
150
140
130
120
110
100
0.24 0.26 0.28 0.3 0.32 0.34 0.36 0.38 0.4 0.42 0.44
Stitch Length cm Finished Relaxed

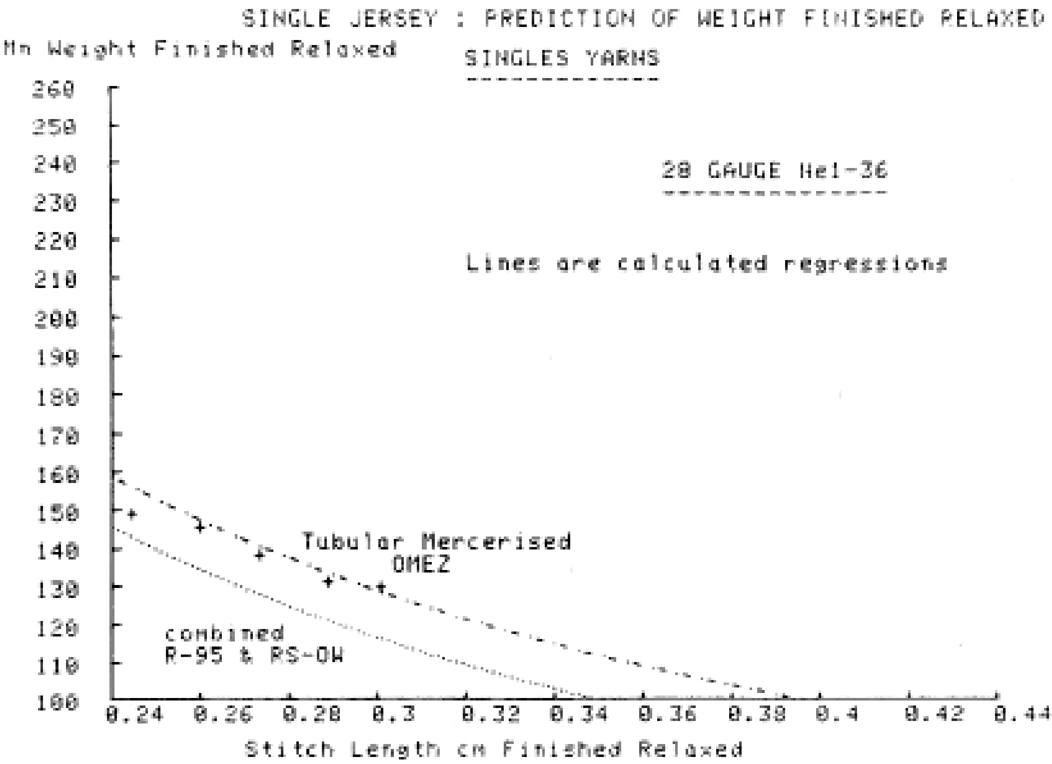
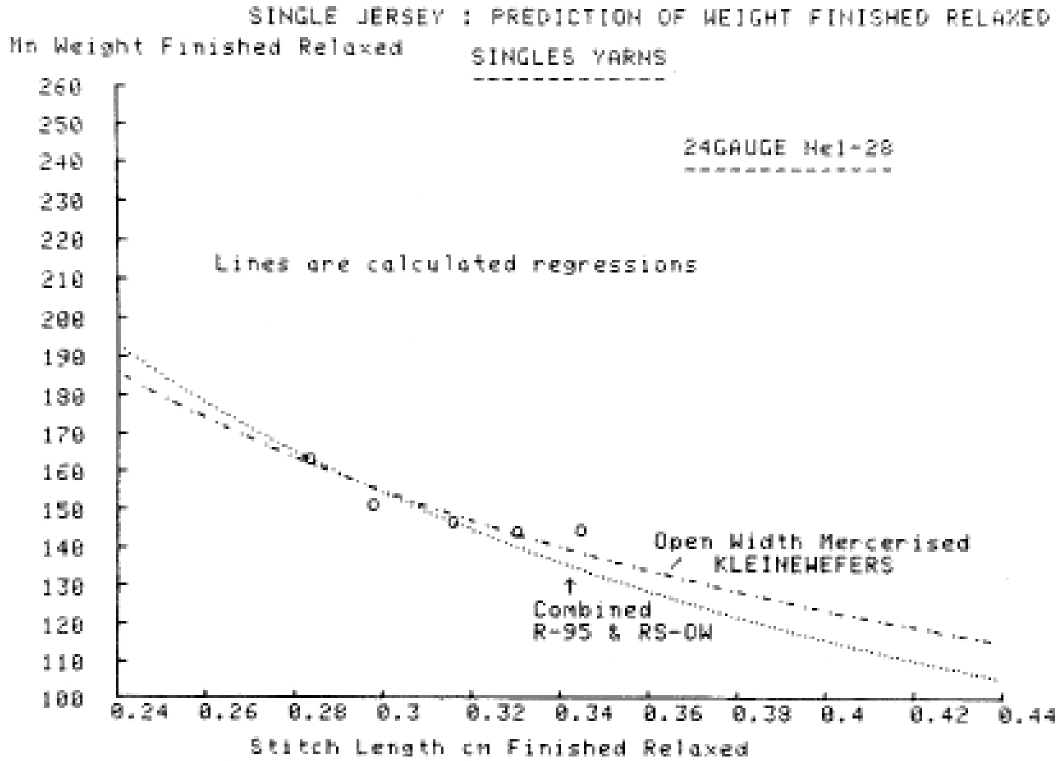
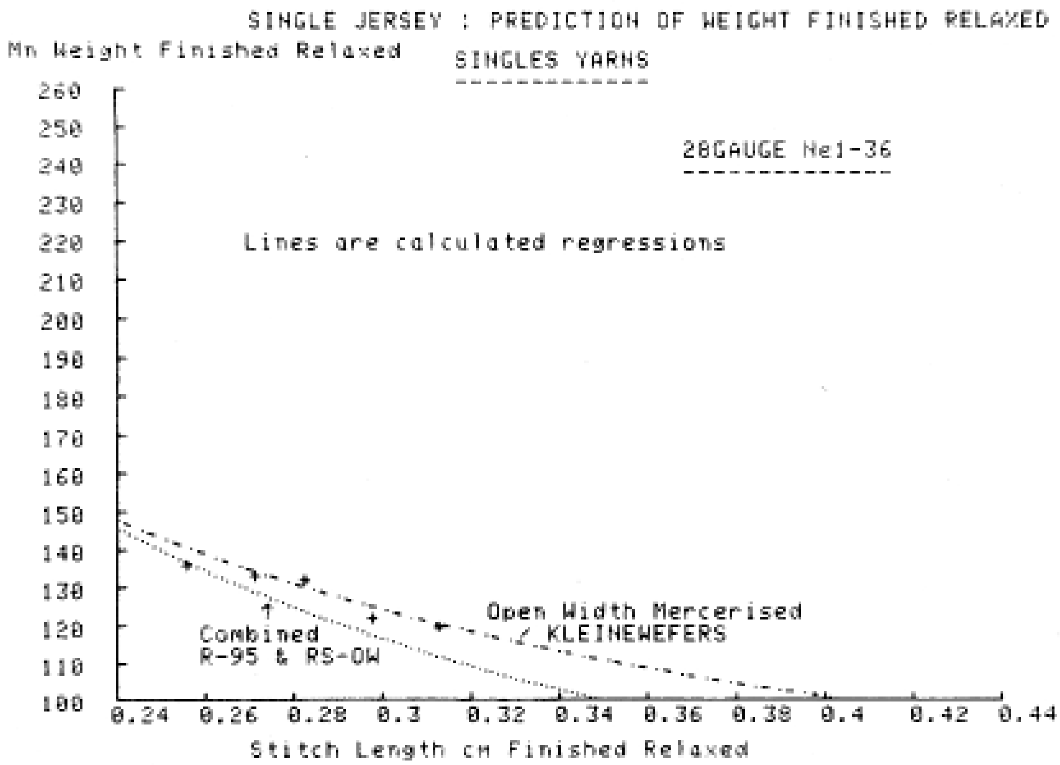

SINGLE JERSEY : PREDICTION OF WEIGHT FINISHED RELAXED
Mn Weight Finished Relaxed
SINGLES YARNS
28 GAUGE Ne1-36
Lines are calculated regressions
Tubular Mercerised OMEZ
combined R-95 & RS-OW
260
250
240
230
220
210
200
190
180
170
160
150
140
130
120
110
100
0.24 0.26 0.28 0.3 0.32 0.34 0.36 0.38 0.4 0.42 0.44
Stitch Length cm Finished Relaxed

Figure 50



SINGLE JERSEY : PREDICTION OF WEIGHT FINISHED RELAXED
Mn Weight Finished Relaxed
SINGLES YARNS
24GAUGE Ne1-28
Lines are calculated regressions
Open Width Mercerised
KLEINEWEFERS
Combined
R-95 & RS-OW
Stitch Length cm Finished Relaxed



SINGLE JERSEY : PREDICTION OF WEIGHT FINISHED RELAXED
Mn Weight Finished Relaxed
SINGLES YARNS
28GAUGE Ne1-36
Lines are calculated regressions
Open Width Mercerised
KLEINEWEFERS
Combined
R-95 & RS-OW
Stitch Length cm Finished Relaxed

Figure 51

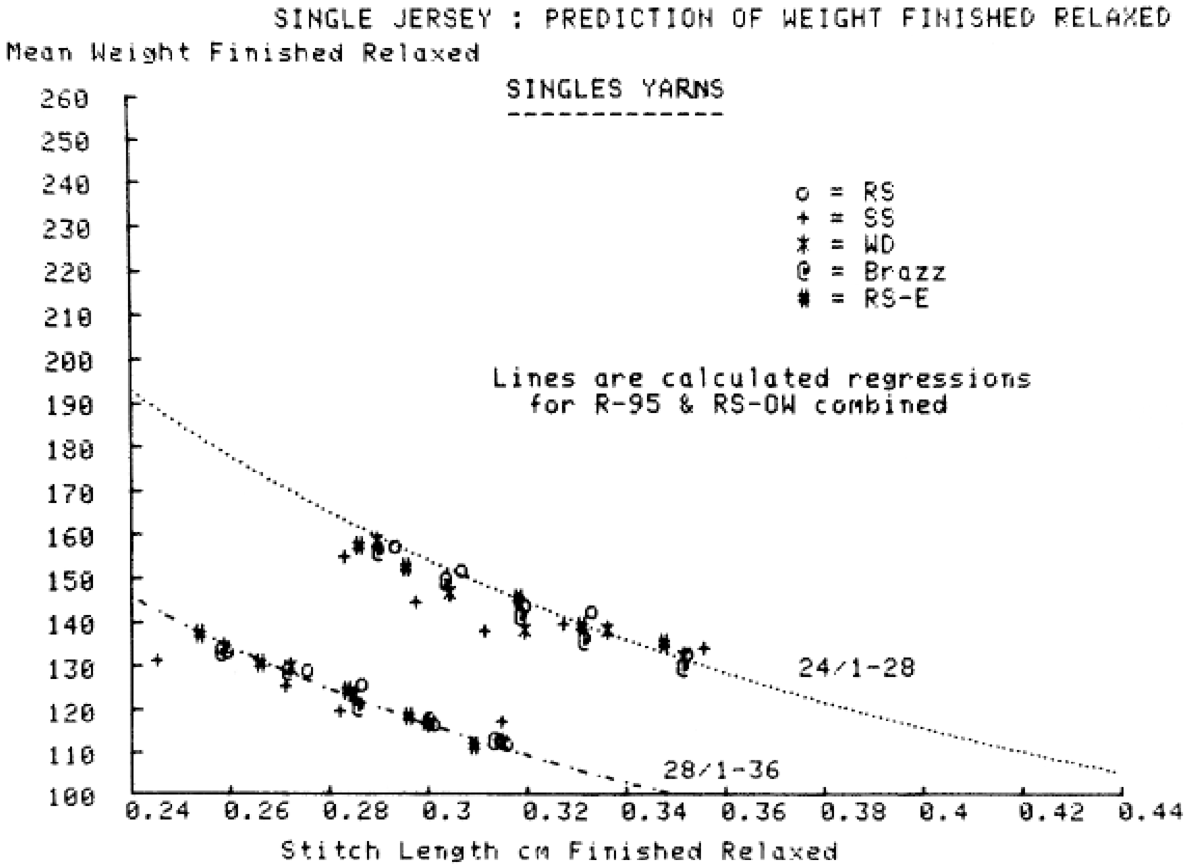
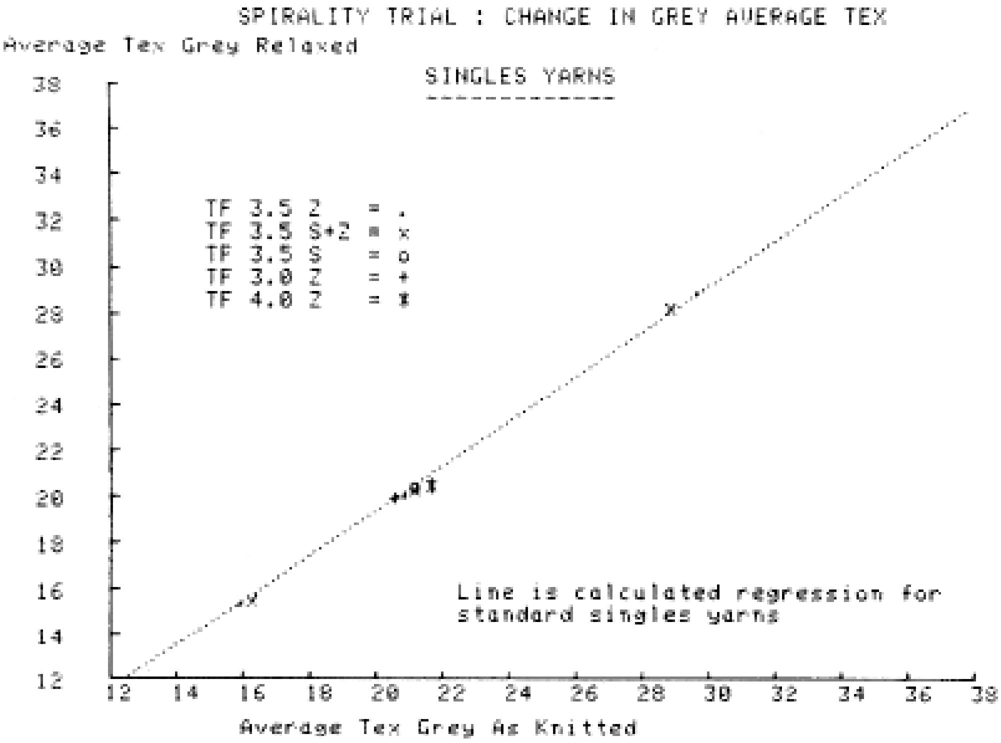
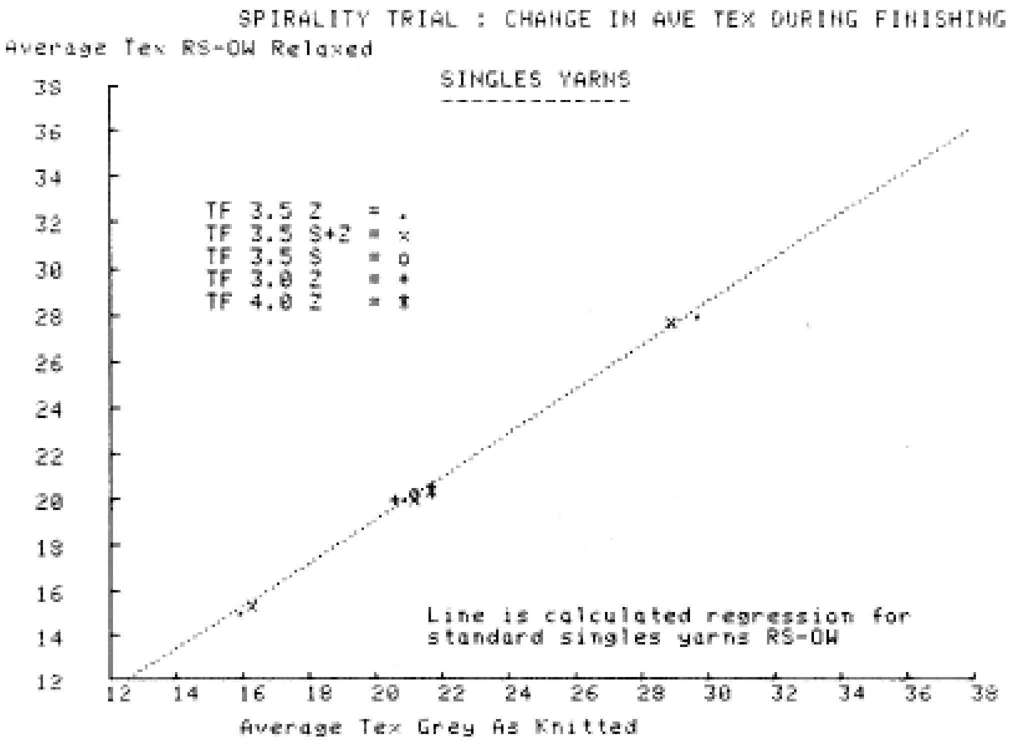

SINGLE JERSEY : PREDICTION OF WEIGHT FINISHED RELAXED
Mean Weight Finished Relaxed
SINGLES YARNS
o = RS
+ = SS
* = WD
@ = Brazz
# = RS-E
Lines are calculated regressions for R-95 & RS-OW combined
24/1-28
28/1-36
260
250
240
230
220
210
200
190
180
170
160
150
140
130
120
110
100
0.24
0.26
0.28
0.3
0.32
0.34
0.36
0.38
0.4
0.42
0.44
Stitch Length cm Finished Relaxed

Figure 52

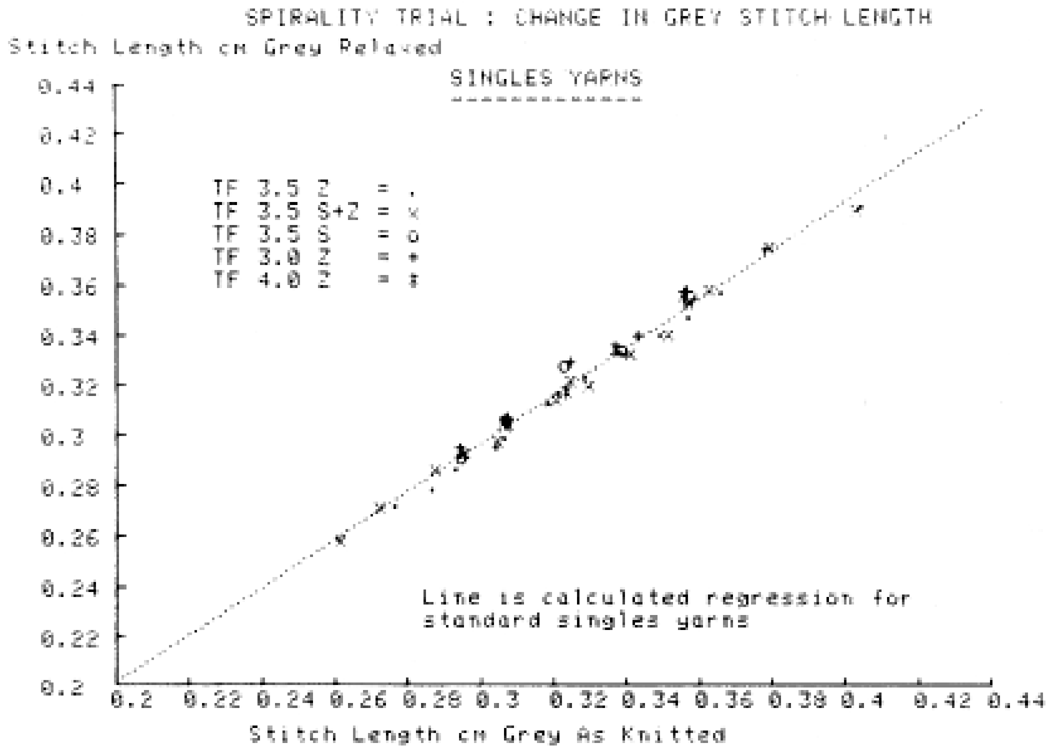


SPIRALITY TRIAL : CHANGE IN GREY AVERAGE TEX
Average Tex Grey Relaxed
SINGLES YARNS
38
36
34
32
30
28
26
24
22
20
18
16
14
12
TF 3.5 Z = .
TF 3.5 S+Z = x
TF 3.5 S = o
TF 3.0 Z = +
TF 4.0 Z = *
Line is calculated regression for standard singles yarns
12
14
16
18
20
22
24
26
28
30
32
34
36
38
Average Tex Grey As Knitted



SPIRALITY TRIAL : CHANGE IN AVE TEX DURING FINISHING
Average Tex RS-OW Relaxed
SINGLES YARNS
38
36
34
32
30
28
26
24
22
20
18
16
14
12
TF 3.5 Z = .
TF 3.5 S+Z = x
TF 3.5 S = o
TF 3.0 Z = +
TF 4.0 Z = *
Line is calculated regression for standard singles yarns RS-OW
12
14
16
18
20
22
24
26
28
30
32
34
36
38
Average Tex Grey As Knitted

Figure 53


SPIRALITY TRIAL : CHANGE IN GREY STITCH LENGTH
Stitch Length cm Grey Relaxed
SINGLES YARNS
TF 3.5 Z = .
TF 3.5 S+Z = x
TF 3.5 S = o
TF 3.0 Z = +
TF 4.0 Z = ‡
Line is calculated regression for standard singles yarns
0.2 0.22 0.24 0.26 0.28 0.3 0.32 0.34 0.36 0.38 0.4 0.42 0.44
Stitch Length cm Grey As Knitted

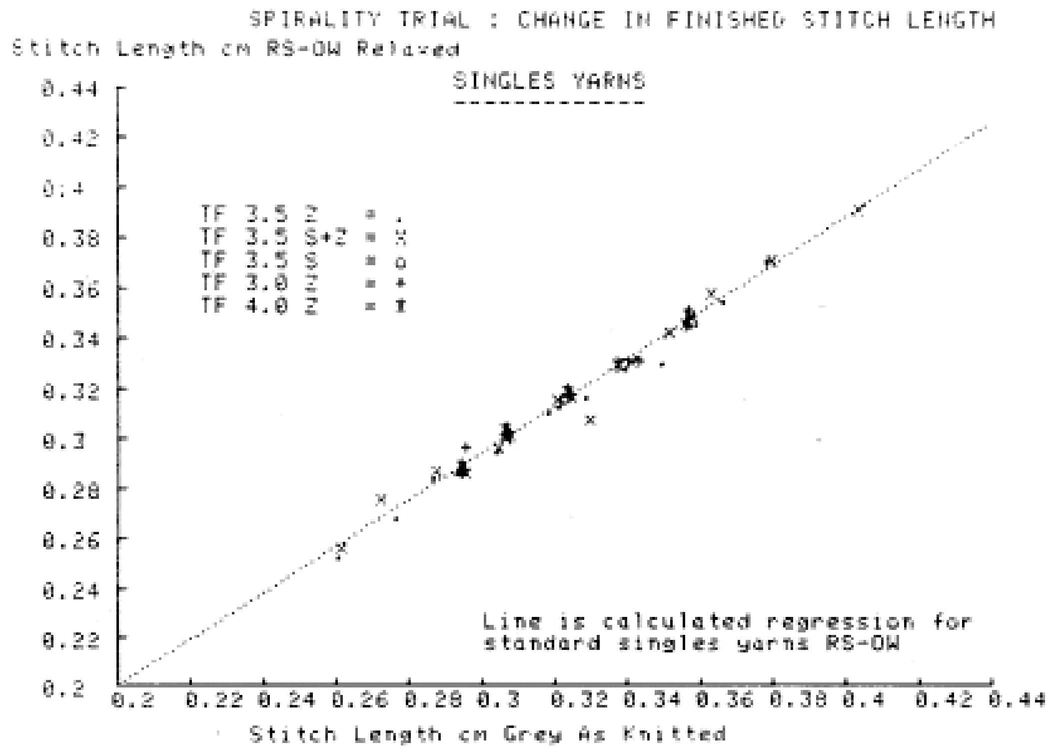
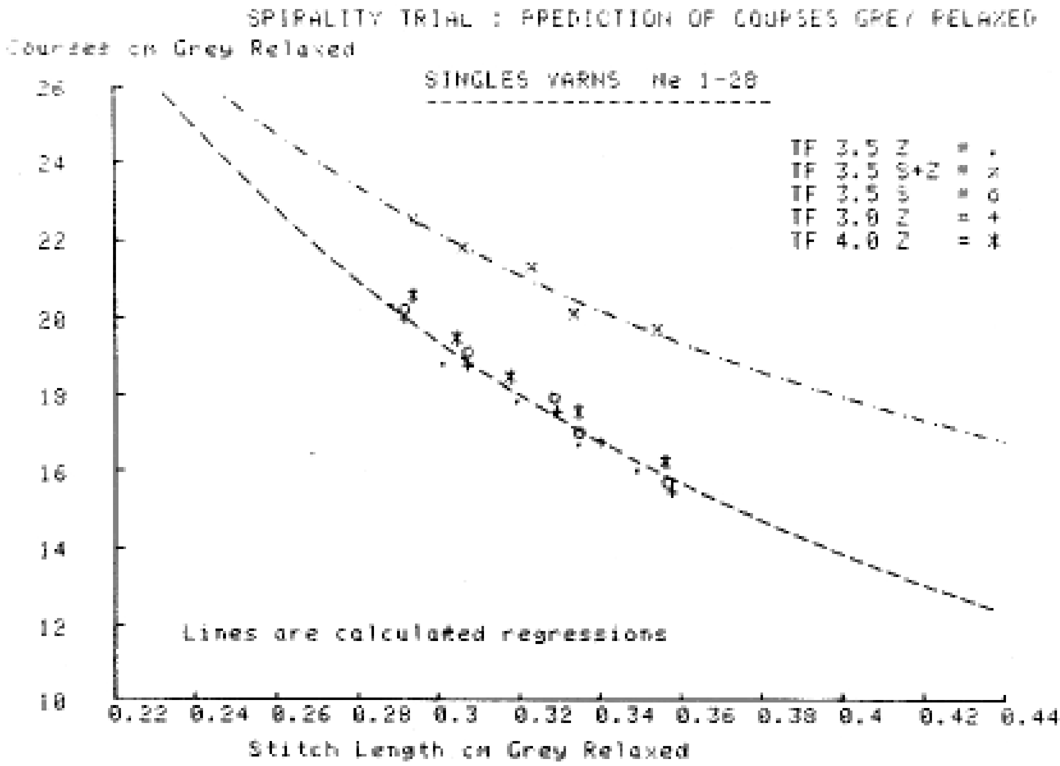

SPIRALITY TRIAL : CHANGE IN FINISHED STITCH LENGTH
Stitch Length cm RS-OW Relaxed
SINGLES YARNS
TF 3.5 Z = .
TF 3.5 S+Z = x
TF 3.5 S = o
TF 3.0 Z = +
TF 4.0 Z = ‡
Line is calculated regression for standard singles yarns RS-OW
0.2 0.22 0.24 0.26 0.28 0.3 0.32 0.34 0.36 0.38 0.4 0.42 0.44
Stitch Length cm Grey As Knitted

Figure 54


SPIRALITY TRIAL : PREDICTION OF COURSES GREY RELAXED
Courses cm Grey Relaxed
SINGLES YARNS Ne 1-28
TF 3.5 Z = .
TF 3.5 S+Z = x
TF 3.5 S = o
TF 3.0 Z = +
TF 4.0 Z = *
Lines are calculated regressions
26
24
22
20
18
16
14
12
10
0.22 0.24 0.26 0.28 0.3 0.32 0.34 0.36 0.38 0.4 0.42 0.44
Stitch Length cm Grey Relaxed

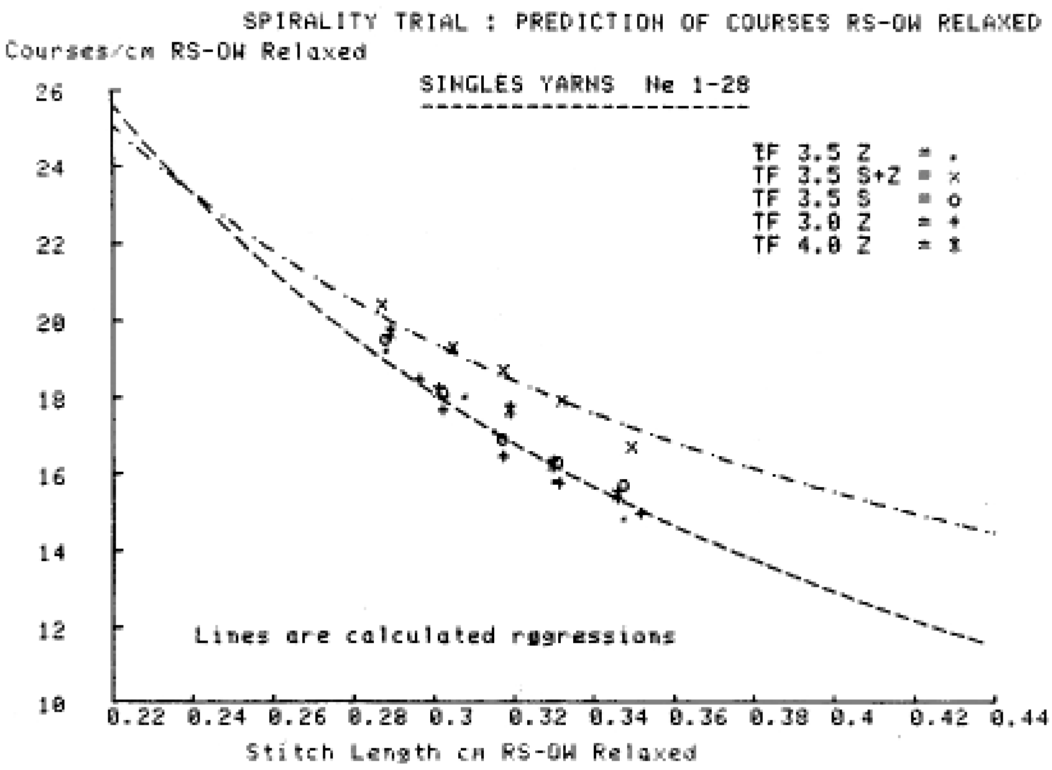
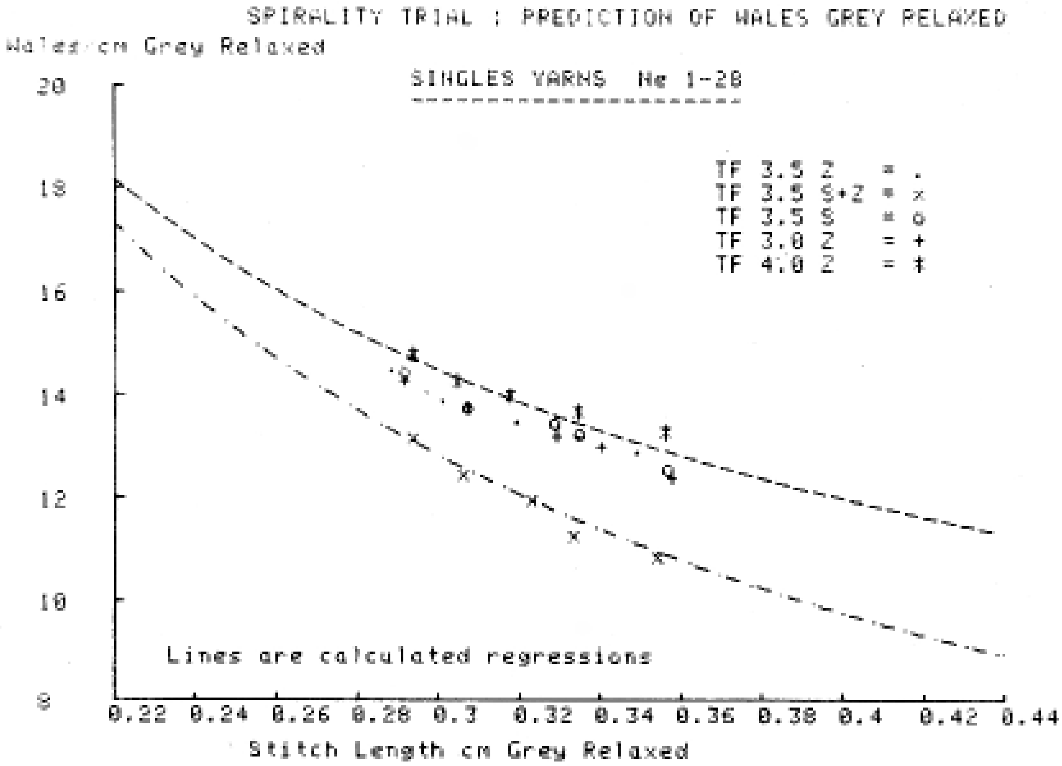

SPIRALITY TRIAL : PREDICTION OF COURSES RS-OW RELAXED
Courses/cm RS-OW Relaxed
SINGLES YARNS Ne 1-28
TF 3.5 Z = .
TF 3.5 S+Z = x
TF 3.5 S = o
TF 3.0 Z = +
TF 4.0 Z = *
Lines are calculated regressions
26
24
22
20
18
16
14
12
10
0.22 0.24 0.26 0.28 0.3 0.32 0.34 0.36 0.38 0.4 0.42 0.44
Stitch Length cm RS-OW Relaxed

Figure 55


SPIRALITY TRIAL : PREDICTION OF WALES GREY RELAXED
Wales/cm Grey Relaxed
SINGLES YARNS Ne 1-28
TF 3.5 Z = .
TF 3.5 S+Z = x
TF 3.5 S = o
TF 3.0 Z = +
TF 4.0 Z = ‡
20
18
16
14
12
10
8
Lines are calculated regressions
0.22 0.24 0.26 0.28 0.3 0.32 0.34 0.36 0.38 0.4 0.42 0.44
Stitch Length cm Grey Relaxed

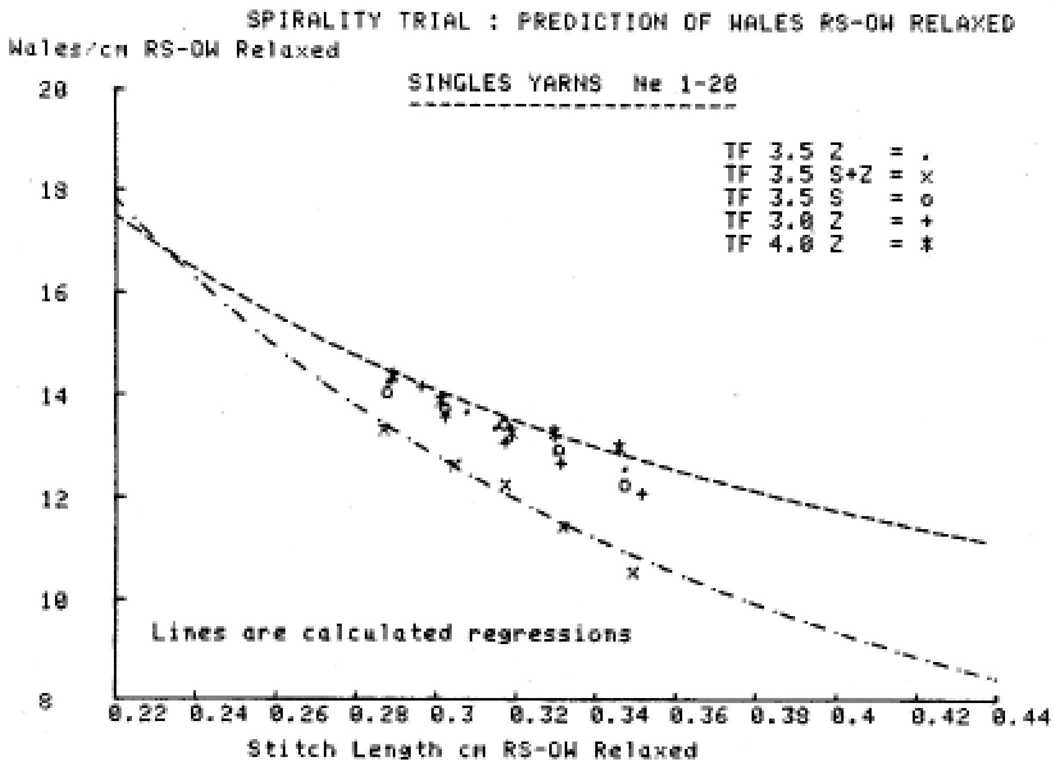
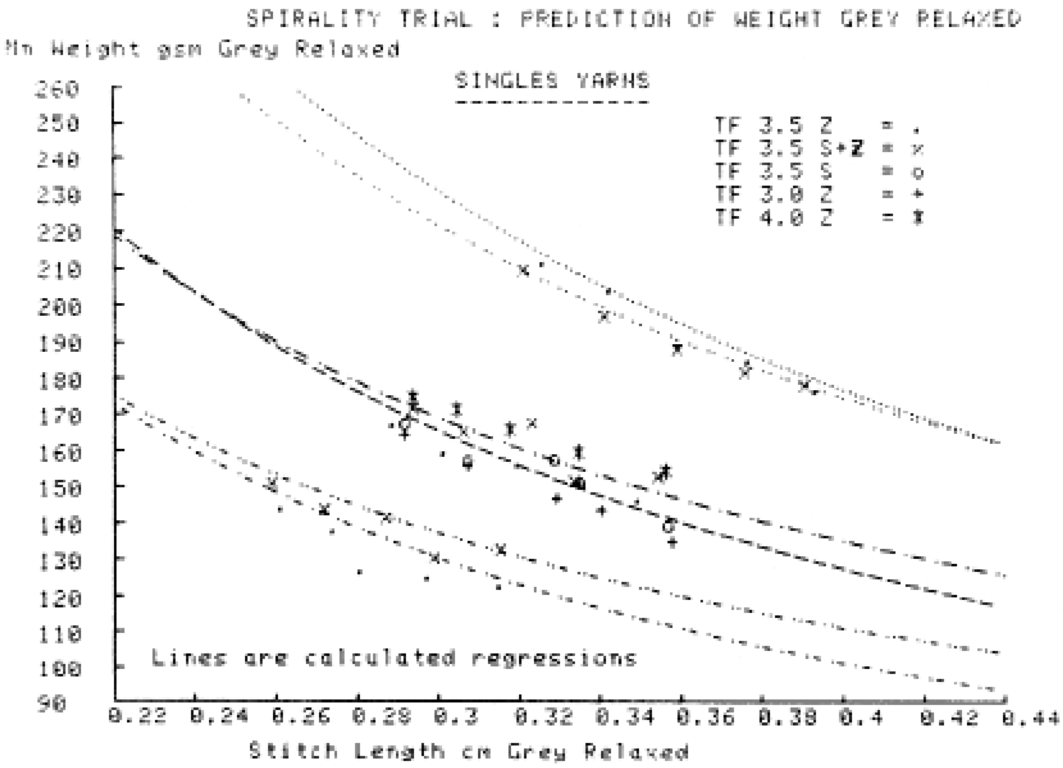
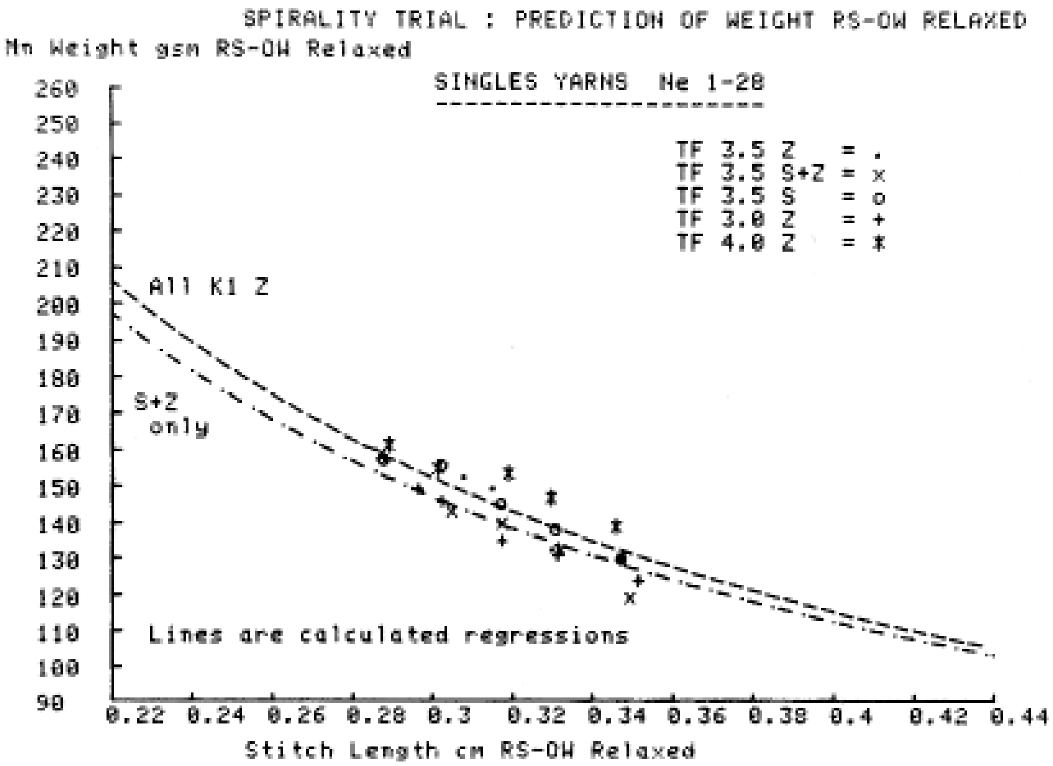

SPIRALITY TRIAL : PREDICTION OF WALES RS-OW RELAXED
Wales/cm RS-OW Relaxed
SINGLES YARNS Ne 1-28
TF 3.5 Z = .
TF 3.5 S+Z = x
TF 3.5 S = o
TF 3.0 Z = +
TF 4.0 Z = *
20
18
16
14
12
10
8
Lines are calculated regressions
0.22 0.24 0.26 0.28 0.3 0.32 0.34 0.36 0.38 0.4 0.42 0.44
Stitch Length cm RS-OW Relaxed

Figure 56

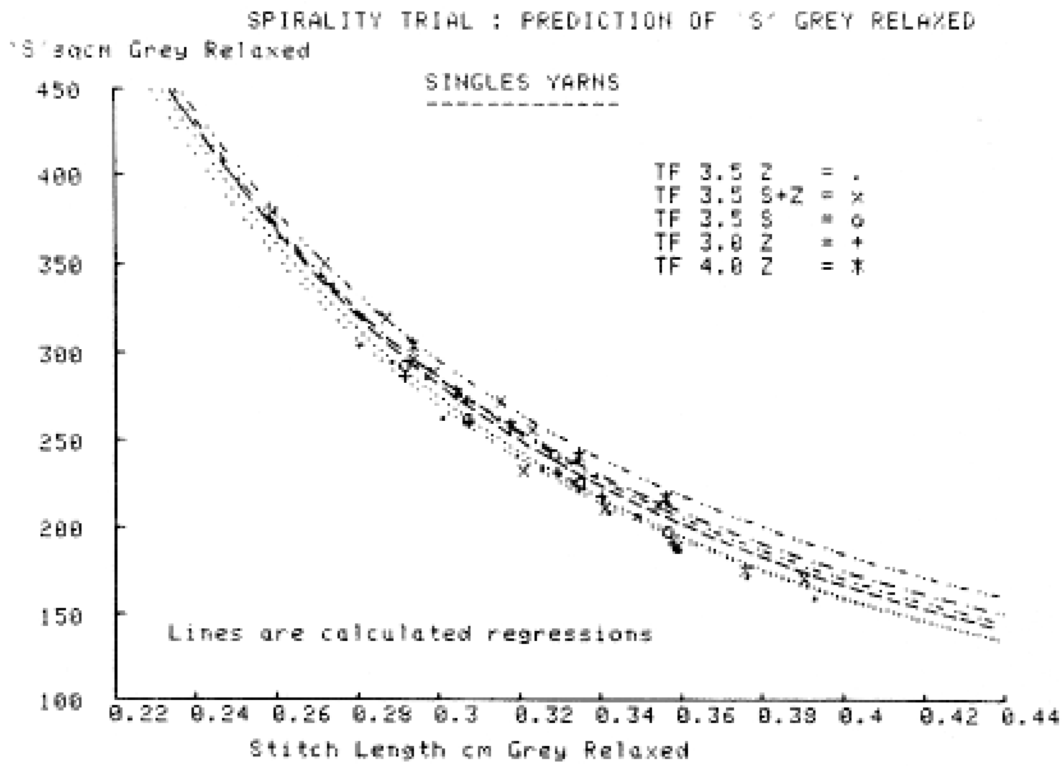


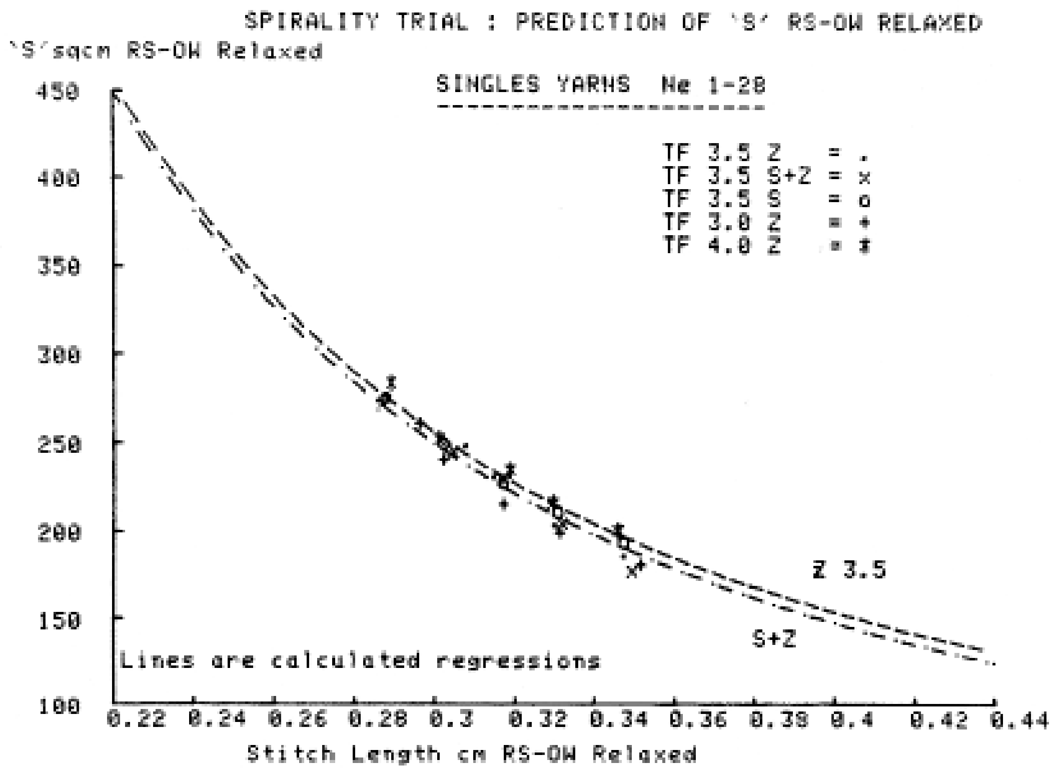
SPIRALITY TRIAL : PREDICTION OF WEIGHT GREY RELAXED
Mn Weight gsm Grey Relaxed
SINGLES YARNS
TF 3.5 Z = .
TF 3.5 S+Z = x
TF 3.5 S = o
TF 3.0 Z = +
TF 4.0 Z = *
Lines are calculated regressions
Stitch Length cm Grey Relaxed



SPIRALITY TRIAL : PREDICTION OF WEIGHT RS-OW RELAXED
Mn Weight gsm RS-OW Relaxed
SINGLES YARNS Ne 1-28
TF 3.5 Z = .
TF 3.5 S+Z = x
TF 3.5 S = o
TF 3.0 Z = +
TF 4.0 Z = *
All K1 Z
S+Z only
Lines are calculated regressions
Stitch Length cm RS-OW Relaxed

Figure 57


SPIRALITY TRIAL : PREDICTION OF 'S' GREY RELAXED
'S'sqcm Grey Relaxed
SINGLES YARNS
TF 3.5 Z = .
TF 3.5 S+Z = x
TF 3.5 S = o
TF 3.0 Z = +
TF 4.0 Z = *
450
400
350
300
250
200
150
100
Lines are calculated regressions
0.22 0.24 0.26 0.28 0.3 0.32 0.34 0.36 0.38 0.4 0.42 0.44
Stitch Length cm Grey Relaxed


SPIRALITY TRIAL : PREDICTION OF 'S' RS-OW RELAXED
'S'sqcm RS-OW Relaxed
SINGLES YARNS Ne 1-28
TF 3.5 Z = .
TF 3.5 S+Z = x
TF 3.5 S = o
TF 3.0 Z = +
TF 4.0 Z = *
450
400
350
300
250
200
150
100
Z 3.5
S+Z
Lines are calculated regressions
0.22 0.24 0.26 0.28 0.3 0.32 0.34 0.36 0.38 0.4 0.42 0.44
Stitch Length cm RS-OW Relaxed