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bear today, as they have for three generations, that mark of assurance of quality and reliability—the name of the maker. The generally acknowledged supremacy of the "KAYSER" Merchandise is not the work of a day or a year, but the cumulative result of many years leadership which compels gradual recognition and emulation on the part of others in the same field.

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The United States Conditioning and Testing Co.

OFFICES AND LABORATORIES:

**340-344 Hudson St., cor. Charlton St.
New York City, N. Y.**

D. E. DOUTY, Manager

F. G. BOYÈ, Superintendent

K. B. LAMB, Chemical Engineer

The laboratories of the United States Conditioning and Testing Co. are the largest and most completely equipped of any in America for the general testing and investigation of raw materials and manufactured products of silk, cotton, wool, and other textile fibers.

Conditioning, weighing, boiling-off of silk and scouring of wool; testing of yarns for count, uniformity, strength, elasticity, twist, length of staple, etc.; the analysis of fabrics for fiber, weave, loading, etc., and tests of color are promptly reported.

Chemical analyses of materials and the investigation of technical chemical problems are undertaken.

Expert advice and assistance in the development of industrial processes will be furnished.

CLASSIFICATION OF CHINA SILKS.

The principal silks from North China are either those reeled in establishments equipped and conducted after the European methods, which are known as "Steam Filatures," or those reeled by the natives in a primitive fashion, and which are known as "Tsatilees." There are also the Tussahs, both filature reels and native reels.

The reeling of the Tsatilees is conducted without the killing of the chrysalides, and so has to be completed within a week or two after the cocoons have been spun and before the moths have had time to emerge.

As the great bulk of the crop is reeled in this hasty way, and every available person is engaged at it, it follows that the silk produced—while of the greatest natural brilliancy—is coarse in size and extremely irregular, and the skeins are of a sort that are troublesome for the throwster to handle, and were all formerly reeled without being crossed. "Crossed reels" are now furnished, and silks, originally straight reeled, are re-reeled into crossed reels, and are known as "Improved reels."

The Haineen silks—called after the district where produced—are sometimes quoted separately, being much favored by some users.

Chinas, Japans, and filature tussahs are packed in picul bales of about 133 $\frac{1}{2}$ lbs.

The term "Chinas" is not understood to include Canton silks, though these come from South China. They are entirely different in nature from the North China silks, and are generally reeled in the size of $\frac{1}{16}$ deniers. They are packed in bales of 80 catties=106 $\frac{2}{3}$ lbs.

The following classifications have been carefully prepared by Messrs, Arnhold, Karberg & Co., of China, and are for the season of 1912-1913.

They show the classifications, and the different selections in which each is offered, together with the equivalent prices in taels, which—for the first grades—were the approximate market values at the beginning of the season, and the other prices are given to show the relative values of the various grades.

The tael (of Shanghai) is a weight of silver of 1 $\frac{1}{8}$ oz., and, as its value fluctuates with the cost of the silver metal, the quotations of Chinese silks are also affected as bar silver goes up or down.

The quotations given are for picul bales of about 133 $\frac{1}{2}$ lbs. net, delivered in Shanghai.

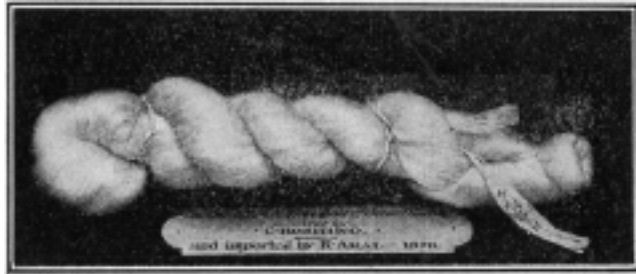
The $\frac{1}{8}$ oz. weight of the tael is in avoirdupois ounces of 437 $\frac{1}{2}$ grains. The quotations of bar silver are in Troy ounces of 480 grains. Thus, if silver was quoted at 25d. (50 cents) an ounce, the net value of the tael would be 60 $\frac{3}{4}$ cents, and a price of 880 taels for a 133 $\frac{1}{2}$ lb. bale of "Soy Lun" would figure out a silver cost of \$4.01 per pound.

To arrive at the cost, landed in New York, there would have to be added to the above figures the expense of the buying, inspection, weighing, brokerages, transportation, insurance, exchange, interest, and other charges, to figure which accurately is a complex matter.

In figuring on China silks in New York, it is customary to estimate the value of the tael as 70 cents when bar silver is at 26d. (52 cents), and proportionately for other prices.

Canton silks are quoted in Asia in Mexican dollars, which are worth about 50 cents in gold.

Japanese silks are quoted in "yen," which are also worth about 50 cents, gold.



Morimura, Arai & Co.

19 Madison Ave., New York

Branch of

Yokohama

Ki-ito Gomei Kwaisha

(Yokohama Raw Silk Co.)

Yokohama, - - Japan

RAW SILK

CLASSIFICATION OF CHINA STEAM FILATURES.

			Price Tails
Extra-Best Chops			
Soy Lun	Anchor	Ex. 1. 2	880
Sinchong	Factory	Ex. 1. 2	870
E. Woo	E W F	Best 1. 2	"
Best Chops			
Yang Silk Filat.	Class 1 Rayon d'Or	Ex. 1. 2	850
Lun Hwa	" Gold Dble Dragon	1. 2. 3	"
M. Denegri	" M. D.	Ex. 1. 2	"
Tong Yue	" Evergreen	Ex. 1. 2	"
Jinchong	" Gold Crown	Ex. 1. 2	"
Yah Sun Chong	Class 2 Billiken	Ex. 1. 2	840
Chun Tsiang	" Flying Lizards	1. 2. 3	"
Woo Tsze King	" W. T. K.	Ex. 1. 2	"
M. Denegri	" Teh Lih	Ex. 1. 2	"
Fair Best Chops			
Sun Kee	Class 1 Centaure	Ex. 1. 2	825
Wei Lung	" Stag	Ex. 1. 2	"
Ze Jing Yung	" Ze Jing Yung	Ex. 1. 2	"
Sin Kong	" Griffon	Ex. 1. 2	"
Yung Tai	" Gold Dble Deer	1. 2. 3	"
Yah Wo	" Gold Clock	Ex. 1. 2	"
Yah Zun Chong	" Gold Watch	Ex. 1. 2	"
Wu Tsze Kee	" Jockey	1. 2. 3	"
Jeay Khong	" Sans Pareil	1. 2. 3	"
Yah Yuen	" Gold Dollar	Ex. 1. 2	"
Ching Wah	" Double Cock	1. 2. 3	"
M. Denegri	" Rose	Ex. 1. 2	"
Wai Lung	Class 2 Airship	Ex. 1. 2	815
Yah Kee	" Horseshoe	1. 2. 3	"
Yung Lung	" Columbia	Ex. 1. 2	"
Yah Woo	" Soleil	Ex. 1. 2	"
Sin Foo	" Sphinx	Ex. 1. 2	"
L. Amidani	" Dble Peach	Ex. 1. 2	"
C. Bedoni	" Crysanthème	Ex. 1. 2	"
Yuen Chong	" Lily	Ex. 1. 2	"
China St. Filat. do	" Geranium	Ex. 1. 2	"
Soy Dzun	" Eagle Globe Eagle	Ex. 1. 2 Ex. 1. 2	" "
Good Chops			
Dah Lun	Class 1 Stork	1. 2. 3	805
Hun Yeh	" H. Y.	Ex. 1. 2	"
Dar Kin	" Double Phoenix	1. 2. 3	"
Tsun Woo	" Spider & Web	Ex. 1. 2	"
Wah Sung	" Lafayette	1. 2. 3	"
Yih Cheong	" Gold Sycee	Ex. 1. 2	"
Yue Khong	" Camelia	Ex. 1. 2	"
Hah Hih Hoh	" Two Gods	Ex. 1. 2	"
Jeay Lung	Class 2 Nine Dragons	1. 2. 3	800
Tung Wei	" Flying Unicorn	1. 2. 3	"
Yue Woo	" Comet	Ex. 1. 2	"
Chue Zen	" Diamond	Ex. 1. 2	"
Sun Dah	" Iris	Ex. 1. 2	"
Yung Kee	" Gold Bat	Ex. 1. 2	"
L. Amidani	" Eiffel-Tower	Ex. 1. 2	"
Shing Wah	" Dble Fish & Dragon	1. 2. 3	"
Sung Kee	" Flying Stork	1. 2. 3	"
Pao Woo	" P. W.	Ex. 1. 2	"
Sun Woo	" Good Boy	Ex. 1. 2	"
Tsun Nih	" Gold Dble Eagle	Ex. 1. 2	"
L. Amidani	" Bulldog	Ex. 1. 2	"

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OTARU
SAPPORO
TAIPEH
TAINAN
TAIHOKU
TAKAW
SHOKA
KAGI
SEOUL
FUSAN
CHEMULPO

CLASSIFICATION OF STEAM FILATURES (Continued).

Good Secondary Chops			Price Tails
Hung Kee	Class 1	Tiger	1.2.3 785
Yung Tai	"	Gold Globe	1.2.3 "
Wai Lun	"	Gold Elephant	1.2.3 "
Yuen Lung	"	Dragon	1.2.3 "
Hung Shing	"	Jeanne d'Arc	Ex.1.2 "
Dong Yah Dzang	"	Sea Pagoda	Ex.1.2 "
Zun Woo	"	W. S.	Ex.1.2 "
Yue Chong	"	Snow Hill & Pagoda	1.2.3 "
Shanghai St. filat.	"	Carnation	Ex.1.3 "
Tcheng Lun	Class 2	Gold Flying Tiger	Ex.1.2 775
A. Riva	"	Gold Star	Ex.1.2 "
Yue Kong	"	Wong Poo Tong	1.2.3 "
Yah Lun	"	Trois Etoiles	1.2.3 "
Yuen Chong	"	Star & Dragon	1.2.3 "
Sun Meu	"	Médaille	1.2.3 "
Chang Lun	"	Tramcar	1.2.3 "
Pao Woo	"	Lighthouse	1.2.3 "
Lee Chee	"	Sea Lion	Ex.1.2 "
Kung Yih	"	Mowtai Peony	Ex.1.2 "
Zee Lun	"	Parrot	Ex.1.2 "
Zih Luen	"	Flag & Globe	Ex.1.2 "
Yung Lee	"	Three Sheeps	1.2.3 "
Tsun Nee	"	Flower Boat	Ex.1.2 "
Gee Kee	"	Mulberry Tree & Web	1.2.3 "
Zee Tsun	"	Moon & Fish	Ex.1.2 "
Shing Tze	"	Lion	1.2.3 "
Shanghai St. filat.	"	Deer & Stork	1.2.3 "
Ting Tze Kee	"	T. T.	Ex.1.2 "
S. M. Yun	"	Minerve	1.2.3 "
Zee Lung	"	Gold Swan	Ex.1.2 "
Secondary Chops			
Lun Chong		Flying Horse	Ex.1.2 760
Ching Wah		Worm Leaf & Cocoons	1.2.3 "
Gee Zun		Excelsior	1.2.3 "
Dah Lun Jinkee		Gold Pagoda	Ex.1.2 "
Keechong		K C S F in cross	1.2.3 "
Lei Woo		Gold Cash	Ex.1.2 "
Gee Fong		Monkey & Wasp	1.2.3 "
Jeay Shing		Whai San	1.2.3 "
Zee Lung		Flag	1.2.3 "
Lun Hwa		Single Dragon	1.2.3 "
Wei Lung		Old Man	1.2.3 "
Dai King		Double Cat	1.2.3 "
Yung Tai		Moon & Rabbit	1.2.3 "
Yue Khong		Lily Flower	Ex.1.2 "
Yue Woo		Saturn	Ex.1.2 "
Sin Dah		Flying Girl	1.2.3 "
Nee Chong		Gold Bell	1.2.3 "
Yue Woo		Rainbow	Ex.1.2 "
Fil. à l'Européenne		Wheelbarrow	Ex.1.2 "
Dong Yah Dzang		Dirigeable	Ex.1.2 "

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CLASSIFICATION OF TSATLEE, IMPROVED REEL.

Extra Best Chops		Good Chops			
	Price for 1st grade Tael		Price for 1st grade Tael		
{ Gold Eagle Globe	Ex. 1. 2. 3	635	Gold Mowtai Peony	1. 2. 3	575
{ Silver do.	1. 2. 3	"	Gold Kangaroo	Ex. 1. 2	"
{ Gold Eagle Bell	Ex. 1. 2	"	Plough	Ex. 1. 2	570
{ Silver do.	1. 2. 3	"	Cloud & Dragon	Ex. 1. 2	"
{ Blue Dragon	Ex. 1. 2	620	Tiger	Ex. 1. 2	"
{ Flying Horse	Ex. 1. 2	"			
{ Gold Zebra	Ex. 1. 2	"	Market 1 Chops		
{ Silver do.	Ex. 1. 2	"	Black Lion	1. 2. 3	550
Best Chops			Three Arrows	1. 2. 3	"
{ Gold Dollar	Ex. 1. 2	600	Wild Dragon	1. 2. 3	"
{ Fountain	Ex. 1. 2	"	Red Peacock	Ex. 1. 2	"
{ Red Almond Fl'r	Ex. 1. 2	"	Gold Stork	1. 2. 3	"
{ Green do.	Ex. 1. 2	"	Moon & Fairy	1. 2. 3	"
{ Five Lions	Ex. 1. 2	"	Red Locomotive	Ex. 1. 2	"
{ Leopard	Ex. 1. 2	"	Blue Horse	1. 2. 3	"
{ Flying Eagle	1. 2. 3	"	Gold Clock	1. 2. 3	"
{ Horse	1. 2. 3	"	Small Buffalo	Ex. 1. 2	"
{ Alm'd Fl'r & M'n	Ex. 1. 2	"	Blue Zebra	1. 2. 3	"
{ do. & St'ne	1. 2. 3	"	Gold Eagle Skeins	1. 2. 3	"
{ Cloud & Lion	Ex. 1. 2	"	Blue A B C in star		"
{ Flying Stork	1. 2. 3	"	Water Lily Flower	1. 2. 3	"
{ Gold Motorcar	Ex. 1. 2	"	Mountain & Pagoda	1. 2. 3	"
{ Silver do.	Ex. 1. 2	"	Gold Phoenix	Ex. 1. 2	545
{ Gold Dble Eagle	Ex. 1. 2	"	Gold Dble Keys	Ex. 1. 2	"
{ Silver do.	Ex. 1. 2	"	Green Flying Stork	1. 2. 3	"
{ Gold H in star	Ex. 1. 2	"	Gold Flying Eagle	1. 2. 3	"
{ Silver H in star	Ex. 1. 2	"	Gold Three Foxes	1. 2. 3	"
{ Star & Stripes	1. 2. 3	"	Carriage	1. 2. 3	"
{ Red Indian	1. 2. 3	"	Bell	1. 2. 3	"
{ Gold Peacock	Ex. 1. 2	"	Mars S Y K	1. & 2	"
{ Silver do.	Ex. 1. 2	"	Gold Buffalo	Ex. 1. 2	"
{ Gold Fish	Ex. 1. 2	"	Gold Watch	1. & 2	"
{ Silver Fish	Ex. 1. 2	"	Columbia	1. 2. 3	540
{ Sphinx	Ex. 1. 2	"	Black Dble Guns	1. & 2	"
{ Sphinx & Lion	Ex. 1. 2	"	Sun	1. & 2	"
{ Lion & Scale	1. 2. 3	"	Oregon	Ex. 1. 2	"
{ Sheep & Flag	1. 2. 3	"	Red Riding Horse	1. 2. 3	"
{ Solstice	A B C	"	Eagle & Pagoda	1. 2. 3	"
{ Globe	A B C	"			
{ Gold Elephant	Ex. 1. 2	"	Market 2 Chops		
{ Silver Elephant	Ex. 1. 2	"	Silver Stork	1. & 2	515
{ Blue Fl'g W'm'n	Ex. 1. 2	"	Silver Phoenix	1. & 2	"
{ Black Fl'g W'm'n	Ex. 1. 2	"	Cash Chop	1. 2. 3	"
{ Yuen Shi Kai	Ex. 1. 2	"			
{ Republican Flag	Ex. 1. 2	"			
{ Blue Eagle & Bell	1. 2. 3	590			
{ Gold Dble Swal's	1. 2. 3	590			
{ Silver Dble Swal's	1. 2. 3	"			
{ Gold Riding Horse	1. 2. 3	"			
{ Silver Riding Horse	1. 2. 3	"			
{ G'd Sycee & Boy	Ex. 1. 2	"			
{ S'r Sycee & Boy	Ex. 1. 2	"			

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CLASSIFICATION OF TSATLEE FILATURE, CROSSED.				CLASSIFICATION OF HAINEEN FILATURE, CROSSED.																																																							
Price for 1st grade Tael				Price for 1st grade Tael																																																							
Extra-Best Chops				<table border="0"> <tr> <td>{ Gold Butterfly</td> <td>1. 2. 3</td> <td>590</td> <td></td> </tr> <tr> <td>{ Butterfly & Almond Flower</td> <td>1. 2. 3</td> <td></td> <td></td> </tr> <tr> <td>{ Blue Lion</td> <td>1. 2. 3</td> <td>560</td> <td></td> </tr> <tr> <td>{ Buffalo</td> <td>Ex. A B C</td> <td>"</td> <td></td> </tr> <tr> <td>{ Black Horse</td> <td>1. 2. 3</td> <td>540</td> <td></td> </tr> <tr> <td>{ Mountain & Pagoda</td> <td>1. 2. 3</td> <td>"</td> <td></td> </tr> <tr> <td>{ Mars S Y K</td> <td>Ex. 1. 2</td> <td>505</td> <td></td> </tr> <tr> <td>{ Gold Unicorn</td> <td>1. & 2</td> <td>500</td> <td></td> </tr> <tr> <td>{ Mercury</td> <td>Ex. 1. 2</td> <td>480</td> <td></td> </tr> <tr> <td>{ Oregon</td> <td>1. & 2</td> <td>"</td> <td></td> </tr> <tr> <td>{ Moose</td> <td>1. & 2</td> <td>470</td> <td></td> </tr> <tr> <td>{ Mars K K</td> <td>1. & 2</td> <td>"</td> <td></td> </tr> <tr> <td>{ Two Gods</td> <td>1. & 2</td> <td>"</td> <td></td> </tr> </table>				{ Gold Butterfly	1. 2. 3	590		{ Butterfly & Almond Flower	1. 2. 3			{ Blue Lion	1. 2. 3	560		{ Buffalo	Ex. A B C	"		{ Black Horse	1. 2. 3	540		{ Mountain & Pagoda	1. 2. 3	"		{ Mars S Y K	Ex. 1. 2	505		{ Gold Unicorn	1. & 2	500		{ Mercury	Ex. 1. 2	480		{ Oregon	1. & 2	"		{ Moose	1. & 2	470		{ Mars K K	1. & 2	"		{ Two Gods	1. & 2	"	
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Monkey & Bee	Ex. 1. 2. 3	"		{ Green Almond Flower	Ex. 1. 2	"																																																					
Pegasus	Ex. 1. 2	565		{ Gold Peacock	Ex. 1. 2	"																																																					
Buffalo	A B C D	"		{ Silver Peacock	Ex. 1. 2	"																																																					
Double Fish	Ex. 1. 2	"		{ Gold Dollar	Ex. 1. 2	"																																																					
Fan	Ex. 1. 2. 3	"		{ Fountain	Ex. 1. 2	"																																																					
Flag	1. 2. 3	"		{ Gold Pheasant	Ex. 1. 2	"																																																					
Mountain & Pagoda	1. 2. 3	555		{ Blue Pheasant	Ex. 1. 2	"																																																					
Good Secondary Chops				{ Cloud Lion	Ex. 1. 2	"																																																					
Small Buffalo	Ex. 1. 2	530		{ Flying Stork	Ex. 1. 2	"																																																					
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Gold Dollar	Ex. 1. 2	520		Good Chops																																																							
Eagle & Skeins	1. & 2	510		Chinese Volunteer	Ex. 1. 2	555																																																					
Gold Mars S Y C	1. & 2	"		Mountain & Pagoda	1. 2. 3	545																																																					
Gold Mars P V M	1. & 2	"		Red Peacock	Ex. 1. 2	540																																																					
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				Silver Stork	1. & 2	510																																																					
				Silver Phoenix	1 & 2	"																																																					

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MERCERIZED YARNS

CLASSIFICATION OF FILATURE TUSSAHS.

Extra Best Chops		Best Chops
	Price	
	Taels.	
Spinning Girls No. 1.....	225	Spinning Girls No. 2..... 205
White Dble Elephant No. 1.....	222½	White Dble Elephant No. 2..... 202½
Sun Pagoda No. 1.....	“	Sun Pagoda No. 2..... “
Japanese Woman No. 1..	“	Japanese Woman No. 2... “
Black Pagoda No. 1.....	“	Black Pagoda No. 2..... “
Yifong Gold Dble Dragon		Yifong Gold Dble Dragon
No. 1.....	“	No. 2..... “
Gold Bell.....	“	Silver Bell..... “
Black Monkey No. 1.....	“	Black Monkey No. 2..... “
Gold Bat No. 1.....	220	Gold Bat No. 2..... 200
Black Dble Magpie No. 1	“	Black Dble Magpie No. 2 “
Black Cowboy No. 1.....	“	Black Cowboy No. 2..... “
Black Fish Bowl No. 1....	“	Black Fish Bowl No. 2.. “
Mowtai Peony No. 1.....	“	Mowtai Peony No. 2..... “
Gold Flying Fish No. 1..	217½	Gold Flying Fish No. 2.. 197½
Black Leopard No. 1.....	“	Black Leopard No. 2.... “
American & Chinese Flag		American & Chinese Flag
No. 1.....	“	No. 2..... “
Black Pony No. 1.....	“	Black Pony No. 2..... “
Boy & Umbrella No. 1....	“	Boy & Umbrella No. 2... “
Eighteen Boys No. 1.....	215	Eighteen Boys No. 2.... 195
Seven Stars & Dragon No.		Seven Stars & Dragon No.
1	“	2
Double Horse No. 1.....	“	Double Horse No. 2..... “
Three Stars No. 1.....	“	Three Stars No. 2..... “
Airship No. 1.....	“	Gold Unicorn No. 2..... “
Gold Unicorn No. 1.....	“	Airship No. 2..... “
Sun No. 1.....	“	Gold Toad..... “
Commercial Flag.....	“	Sun No. 2..... “
Mitsui Bussan Kaisha No. 1	“	Mitsui Bussen Kaisha No. 2 “
		Gold Woman..... 192½
		Wong Lei Soo..... “
		Dble Men & Globe..... “
		Mandarin Horse..... “
		Gold Ostrich..... “
		Spider
		Gold Single Cock..... “
		Gold House..... “
		Willow & Dble Swallows. “
		Gold Stork..... “
		Gold Heron..... “
		Black Dble Swallows.... “
		Dble Mandarin Duck.... “
		Fighting Quail..... “
		Pluck Cocoons..... “
		Black Single Deer..... 192½
		Black Single Goat..... “
		Black Zebra..... “
		Gold Water Lily..... “

IMPORTED AND DOMESTIC
COTTON YARNS
 OF EVERY DESCRIPTION

For Immediate Delivery

Cop Yarns--Carded and Combed

Two-ply Egyptian and Sea Island Yarn for Tie Silk
 and Fancy goods.

Three-ply Special Twist Yarn for Moires.

Gassed Egyptian Warp Twist Skeins.

Filling Yarns for Bengalines, All-overs etc.

Polished Yarns on Tubes.

Double-spun Single Yarns—Tubes and Skeins.

Gassed and prepared Lace Yarns.

Velvet Yarns in Skeins and Warps.

SPECIALTY "New Process" Mercerized Yarns
 guaranteed against streaky dyeing.

SPECIALTY Dyed Shuttle-Cops; Imported and
 Domestic. All Standard Numbers.

JOS. J. DE LONG

Eagle Building
 265 Fourth Avenue
 Cor. 21st Street

New York

CLASSIFICATION OF FILATURE TUSSAHS (Continued).

Good No. 1 Chops		Market 1 Chops	
Gold Single Man.....	187½	Gold Snake No. 2.....	160
Camelia	"	Gold Phoenix.....	"
Gold Eagle.....	"	Gold Dollar.....	"
Gold Snake No. 1.....	185	Gold Cash.....	"
Black Dble Lion.....	"	Gold Lion.....	"
Green Parrot.....	"	Red Eagle.....	155
Black Flying Horse.....	"	Red Woman.....	"
Policeman	"	Red Ostrich.....	"
Black Elephant Boy.....	"	Balloon No. 2.....	"
		Piano Girl.....	"
Fair 1 Chops		Pluck Mulberry.....	"
Silver Eagle.....	177½	Piano Boy.....	"
Gold Mars.....	"	Gold Tiger.....	"
Black Buffalo.....	"	Gold Dble Rabbits.....	"
Silver Ostrich.....	"	Gold Dble Men.....	"
Balloon No. 1.....	"	Gold Steamboat.....	"
Black Cat.....	"	Gold Dble Peach.....	"
Black Dragon & Tiger....	"	Black Dble Rabbits.....	"
Dragon & Globe.....	175	Gold Crab.....	"
Silver Woman.....	"	Gold Pigeon.....	"
Gold Pine & Stork.....	"	Red Single Cock.....	"
Silver Single Cock.....	"	Gold Man & Dragon.....	"
Silver House.....	"	Single Horse Head.....	"
Silver Stork.....	"	Black Dble Goats.....	"
Citron	"	Black Locomotive.....	"
Gold Horse.....	"	Blue Dble Wild Geese....	"
Gold Mountain.....	"		
Gold Single Peach.....	"		
Black Riding Horse.....	"		
Black Seven Stars.....	"		
Red Dble Wild Geese....	"		
Black Fir-tree.....	"		
Silver Water Lily.....	"		
Boy & Ladder.....	170		
Black Flying Dragon.....	"		
Silver Incense.....	"		

Manchester, England.
Crefeld & Barmen, Germany.

Fred Sternberg & Co.

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New York, N. Y.

Imported & Domestic

COTTON YARNS

Plain

Gassed

Mercerized

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For Knitters, Weavers, Braiders and
Lace Makers.

Best Super Combed Sea Island HARNESSTWINES.

We make a Specialty in non-streaking Mercerized Cotton Yarns for Hosiery, in carded or combed Egyptian or Combed Sea Island, in skeins or on cones, in natural or fast colors or Fast Black.

**CLASSIFICATION OF CANTON FILATURES
FOR AMERICA. SEASON OF 1912-1913.
As Made by Arnhold, Karberg & Co., of China.**

* Stands for favorite chops.

Extra Extra A. Crack Chops.

Chee Chun Wo	Kwong Shun Hang
Chung Sun Hang	Kwong Shun Yun
Hau King Lôn	Kwong Tung Yuen
*King Seng	Ming Cheong
Kum Lun Tai	Miu King Cheong
Kwong Cheong	*Tsung Wai Hang
Kwong Hing Wo	*Wing Cheong Sing
Kwong Shun Cheong	Zebra
Kwong Shun Ching	

Extra Extra A.

*Chung Kee Cheong	*Kwong Wo Hing
*Hau Sing Cheong	*Mee Kee
*Hip Kee	Miu King
Ho Kee	Miu King Yuen
King Kee	Sai Sill Lun
Kwong Chow Yuen	Tack Cheong Lun
Kwong Lee Wo	Teen Kee
Kwong Wai Hang	Wing Hang
*Kwong Wo Cheong	Wing Lun
Kwong Wo Hang	

Extra Extra B.

Ah Chow	Kwong Seng	*Tack Cheong Sing
*Cheong Hing	Kwong Sing Hing	Tack Kee
Cheong Seng	Kwong Wo Lun	*Tien Po Hang
Cheung Lun	Kwong Wo On	Tung Cheong Sing
Chung Chen	Kwong Yuen Tung	Tung Shing Lun (Pea-
*Chung Hing Tai	*Kwong Yuen Hang	cock).
*Chung Hung Sun	*Lun King	*Tung Wo Cheong
*Double Star	*Ming Kee	*Tung Yuen
Fei Loong	Ming Lun	Wai Yuen
*Gold Horse	*Ming Tack	Wen Sing Cheong
Hau King	Miu Ching Lun	Wing Ching Cheong
*Hau King Shun	Miu King Lôn	(Star).
*Hau King Sing	Miu Lôn King	Wing Ching Cheong
Hau Lun	Miu Lun Hing	(Unicorn).
Hau Sie Lun	Miu Sie Lun	*Wing Hing Lun
Kam Chung	Miu Ying Lun	Wing King Lun
King Lun Yuen	*Pak Shiu Hau King	Wing Kut Cheong
*King Sing (Gold Dragon).	*Po Seng	*Wing Shing Lun
King Wo	Po Tien Hang	Wing Shun Hang
Koun King Lun	*Quang Wo Hing	Wing Wo Lun
*Kum Wa Lun	Red Elephant	Yi Tai Li
Kun Wa Lun	Shing King Lun	*Yu King
Kwang Sun On	Shoi Him Wo	Yu King Lun
Kwong Hang	Shun Kee	Yu Loong Hing
Kwong Ho	*Shun King	Yu Wo Cheong
*Kwong Lun Hing	Soey Cheung	*Yuen King
	Sui King Lun	Yuk Wo Hing

Jerome C. Read, President
Henry S. Park, Secretary and Treasurer

The Read & Lovatt Manufacturing Co.

COMMISSION
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THROWSTERS

NEW YORK OFFICE
Emmet Building
95 Madison Ave. Corner 29th St.

MILLS
Weatherly, Pa., Palmerton, Pa. and Elmira, N. Y.

CLASSIFICATION OF CANTON FILATURES (Continued).

* Stands for favorite chops.

Extra A.

*Chee Hing Lun	On Wo Hing
Ching Wo Hang	Sui Lun
Fook Lun Cheong	Tack Lun Sing (Green Ele- phant)
Hau Lun Hing	Tai Lee
*Hip Lee Wo	Tung Wing
Kai Lun Cheong	Wah Lun Cheong
*King Sing (Gold Lion)	Wing Chan
King Cheong	Wing Cheong
Kum King Wo	Wing Cheong Ching
Kum Sing Lun	Wing Cheong Hang
Kwong Cheong Sing	Wing Cheong Hing
Kwong Hing	Wing Cheong Lun
Kwong Shun Tai	Wing Cheong Yuen
Kwong Tai	Wing Ching Wo
Kwong Tai Lun	Wing Hung Cheong
Kwong Wo Ching	Wing King Cheong
*Kwong Wo Loong	Wing King Yuen
*Leun Fat Cheong	Wing On Lun
Miu Cheong	Yip Cheong
*Miu Lun	Yut Tung Cheong
Miu Wo Cheong	Yut Tung Yuen
*Nam Lun	
Nam Seng	

Extra B.

Choi King Lun	Miu Yu Ye
Fook Kee	Tak Cheong
Kwong Lee	U Hau Cheong
Leun Seng	Wai King Wo
Man Yu Ye	Wing Ke Cheong
Mee Lee Sang	Wing Lee Ching
Meen Chee Cheong	Yee Wo Cheong
Min Tai Cheong	Yu Ye Cheong

No. I.

Shiu King Wo
Wing Shing Cheung

No. II.

Quan Kee
Sui Lun Hing

No. III a.

Sing Cheong
Soey Kee
Soey Wo Cheong
Yee Wo Hing
Yee Wo Lun

No. III b.

Tack Wo Hing
Yan Kee
Yan Loong
Yuen Cheong

Fou Kai Sang
Kum Cheong
Sai Cheong Lun

Kum Lun Cheong
Lee Hing Loong

Hing Lun
King Yuen
Mei Lun
Quan Wo Hing

Chee Cheung
Po Kee
Po King Loong

H. F. HOFER & CO.

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THROWN SILKS

GENERAL OFFICE
ROMAINE BUILDING
ROOMS 306-10
PATERSON, N. J.

NEW YORK OFFICE
260 WEST BROADWAY

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Scranton, Pa.	- High Grade Organzines
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Paterson, N. J.	- Coarse Size Organzines
Haledon, N. J.	- Hosiery Tram
Middletown, N. Y.	- Crepe Twists
Oxford Furnace, N. J.	- Sundry Trams

It has always been our principle to call our patrons' attention to the necessity of ascertaining values according to conditions of the merchandise and not purely upon price. Price without a clear definition as to the condition of silk is as problematical as the price for gold without knowing the fineness in karats.

We offer our patrons a full guarantee for value for any transaction in silk yarns and such guarantee is embodied in our selling method, the "100% Basis".

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Tram, Artificial Silk,
Organzine.

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Telephone 2013

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S. R. BLISS, *Sec. & Gen'l Mgr.*

[H. A. FORBES, *Representative, Paterson, N. J.*

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Dickson City, Pa.
Jessup, Pa.

North Scranton, Pa.
South Dickson, Pa.

CLASSIFICATION OF STANDARD CHOPS OF JAPAN
FILATURES,

As Arranged by Villa, Stearns Co., of New York.

KANSAI.

Kawano, Gold Turtle	<i>Special Grand Extra.</i> Sano, Factory Yonago, 3 Rice Bales
Saninseishi, Armour	<i>Double Extra A.</i> Gunge, Pheasant
Hodono, Dancing Girl	Hasegawa, Picture
Tase, Chrysanthemum	Ryou, map
Kazama, Gold Buddha	<i>Double Extra B.</i> Tounkan, Gold Ducks
Hirata, Wrestler	Niwa, Diamond
Konishi, 3 Cocoons	Watarae, Gold Chickens
Shiroishi, Gold Drum	<i>Best Extra.</i> Chubi, Rising Sun
Yoneya, 1 Stork	Kagoshima, Stork
Hiugaseishi, Sunflower	Obama, Kingfisher
Shinshosha, Ducks	<i>Extra.</i> Koseisha, Cherry
Yawata, 2 Doves	Yajima, 8 Arrows
Noro, Peaches	Nansogumi, Gold Samurai
Hikamikyodo, Gold Chestnuts	<i>Best No. 1 to Extra.</i> Mitsubishi, Gold Crest
Koshiuseishi, Helmet	Tajimakyodo, Gold Cocoon
Hakuosha, Iris	Amada, Gold Eagle
Hakureisha, Gold Fan	<i>Best No. 1.</i> Hosansha, Gold Peony
Tome, Gold Rat	Aratani, Stork
Hamanasha, Samurai	Tankosha, Rabbit
Yamajiugumi, Gold Star	<i>No. 1.</i> Hayashigumi, Cup
Ozawagumi, Medal	Abiko, Gun
Oguchi, Gold O	Kaikokukan, K. H.

SHINSHIU

Motorokkoshu, Crown	<i>Special Extra.</i> Takagikau, Gun
Kubotakan, 1 Man	<i>Extra.</i> Rokumonsen, 6 Gold Coins
Matsuo, Fan	Shojokan, Gold Eboshi
Goshukan, G. S.	Kumashiro, Mask
Inamura, Sun	<i>Best No. 1.</i> Fusokan, Seal
Shunmeisha, Gold Bird	Yodasha, Y. D.
Hisakata, Feather Garment	Tenriusha, Parrot.
Oguchigumi, Moon	<i>No. 1.</i> Katakura, Gold Ring
Maruichi, Pen	Onosha, Buddha
	Komatsu, Pine Tree

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**26,000 SPINNING SPINDLES
MODERN MACHINERY**

Century Throwing Co.

P. R. ROWSON, Pres. ALEX. McLANE, Secy. & Treas.

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and
Special Work.**

MILLS

Lansford, Pa. Hudson, Pa.

OFFICE

United Bank Building

152 Market Street Paterson, N. J.

TELEPHONE, 584 PATERSON

**CLASSIFICATION OF STANDARD CHOPS OF JAPANESE
RE-REELS.**

	<i>Extra.</i>	
Usuisha, Princess		Kanrasha, Shake Hands Shimonita, Iron Wheel
	<i>Best No. 1.</i>	
		Kaishinsha, Chrysanthemum
	<i>No. 1.</i>	
Usuisha, 5 Girls		Shimonita, 1 Peach
Kanrasha, Red Characters		Ryoseisha, R. S.
	<i>No. 1—1¼.</i>	
		Kaishinsha, Palace
	<i>No. 1—1½.</i>	
Kosuisha, Sun & Turtle		Tsurumigawa, Gold Stork
Tokohusha, Biwa		Yamada, Gold God
		Zenshinsha, Gold Headgear
	<i>No. 1½.</i>	
Usuisha, 2 Girls		Kanrasha, Gold Coin
Usuisha Deer (Coarse)		Shimonita, 2 Peaches
Kanrasha, K. R. (Coarse)		Kaishinsha, Gold Lily
		Tsurumigawa, Round Stork
	<i>No. 1½—2.</i>	
Usuisha, Gold Maple		Kosuisha, Pine Tree
Usuisha, Red Maple		Kosuisha, 1 Stork
Kanrasha, Silver Characters		Ryoseisha, Red Maple
Shimonita, 3 Peaches		Tokohusha, Chrysanthemum
Shimonita, Gold Letters		Yamada, Tortoise
		Zenshinsha, Silver Headgear
	<i>No. 2.</i>	
Kosuisha, 2 Storks		Shimonita, Silver Letters
Kaishinsha, Silver Lily		Tokohusha, Chickens
	<i>No. 2—2½.</i>	
Usuisha, Silver Maple		Zenshinsha, Gold Chrysanthemum

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Seminole
Nam-trah
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Ontario

Mills

J. G. Hartman Inc.

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WILLIMANTIC, CONN.
COMMISSION THROWSTERS
Organzine. Tram. Fringe. Floss and Twist
QUILLING A SPECIALTY.

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PRES. & GENL. MANAGER

FRANK L. DAVIS
TREAS. & SUPERINTENDENT

Victoria Silk Company

INCORPORATED 1902

TAYLOR,

PENN.

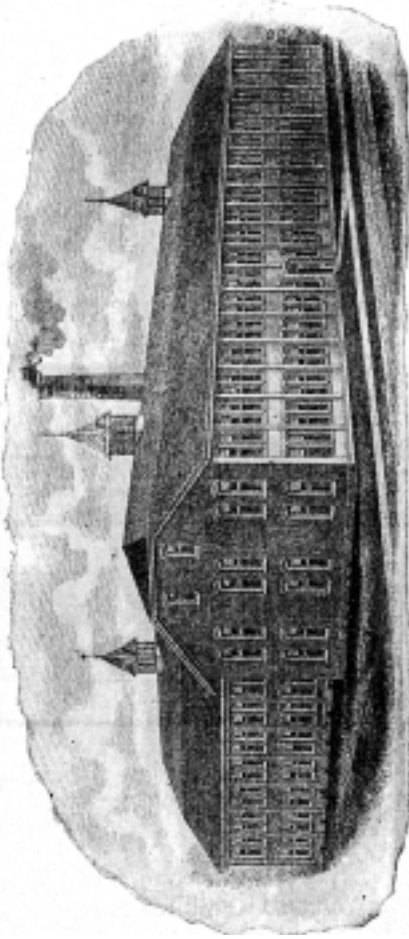
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THROWSTERS**

30,000 Spindles

Organzine, Tram and Crepe de Chine Twist

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THE WILLIAM A. GILBERT COMPANY



Commission Silk Throwsters

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VILLA, STEARNS COMPANY

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IMPORTERS

*European and Asiatic Raw Silk
Thrown and Dyed Silks for all Purposes*

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COMMISSION THROWSTERS

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NEW YORK

MILLS AT:

Scranton,
Carbondale,
Archbald,
and Forest City, Pa.

Cumberland,
Lonaconing, Md.
Fredericksburg, Va.

SOME JAPANESE WEIGHTS AND MEASURES.

Weights.

*1 Momme (commercial)	=	.13228 oz.
10 "	=	1 Tael = about 1½ oz.
*160 "	=	1 Kin = (exact) 1.3251 lbs.
	=	(commercial) 1.32277 lbs.
1000 "	=	1 Kwan = (exact) 8.2817 lbs.
	=	(commercial) 8.26733 lbs.
20 Taels	=	1 Catty = about 1½ lbs.
80 Catties	=	1 Picul = about 133¼ lbs.

* The Momme and Kin are figured, commercially, on the basis of 1.32275 lbs. weight for the Kin, as, at that weight, 756 Kin equal 1000 lbs.

Quotations on Japan silks are in Yen per 100 Kin (132.277 lbs.).

Coinage.

Based on the Yen, valued at 49.842 cents.

Gold 20 Yen	.....	Value in U. S. money,	\$9.9689
" 10 "	.....	" " " "	4.9844
" 5 "	.....	" " " "	2.4921
Silver 50 Sen	.....	" " " "	.2492
" 20 "	.....	" " " "	.0996
" 10 "	.....	" " " "	.0498
Nickel 5 "	.....	" " " "	.0249
Bronze 1 "	.....	" " " "	.0050
" ½ "	(5 Rin).....	" " " "	.0025

Linear Measures.

1 Bu	=	1.4317	Lines
1 Sun	=	1.1931	Inches
10 Sun = 1 Shaku	=	11.9305	"
6 Shaku = 1 Ken	=	5.965	Feet
10 Shaku = 1 Jio	=	3.3140	Yards
1 Ri	=	2.44030	Miles
1 Ri (marine)	=	1.15152	"

Square Measures.

1 Tsubo	=	3.95369	Sq. Yds.
30 Tsubo = 1 Se	=	118.615	" "
10 Se = 1 Tan	=	1186.15	" "
10 Tan = 1 Cho	=	2.45064	Acres
1 Square Ri	=	5.95505	Sq. Miles

Dry Measures.

1 Go	=	.0205	Pecks
10 Go = 1 Sho	=	.2048	"
10 Sho = 1 To	=	2.0476	"
10 To = 1 Koku	=	5.11902	Bushels

Liquid Measures.

1 Go	=	.04765	Gals.
10 Go = 1 Sho	=	.4765	"
10 Sho = 1 To	=	4.765	"
10 To = 1 Koku	=	47.65	"

Shipping Tonnage Measure.

1 Koku	=	¼ ₁₀	Ton
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Emmerich-Dolson Co.
215 Fourth Avenue, New York

Manufacturers of

Thrown Silk Yarns
Hosiery Tram a Specialty

Dyed Silks for Electrical,
Woollen Mill and Knitting
Purposes

Spun Silk Yarns Supplied
In All Forms

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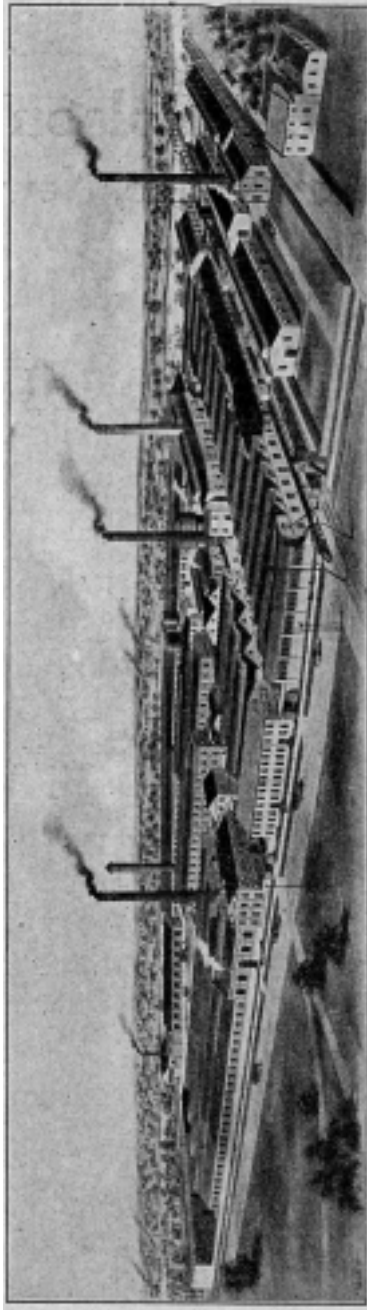
South Bethlehem, Pa. Slatington, Pa.

BRANCH OFFICES—Citizens Trust Bldg.
4th & Market Sts., Philadelphia, Pa.

49 Hamilton St., Paterson, N. J.

Telephone

50a



WEIDMANN SILK DYEING COMPANY

SOME CHINESE WEIGHTS AND MEASURES.

Weights.

- 1 Mace = $58\frac{3}{8}$ grains, av.
 *10 " = 1 Tael, or Léang = $1\frac{1}{8}$ oz., av.
 16 Taels, or Léangs = 1 Chiu, or Catty, or Kin (Hong Kong Wgt.)
 = $1\frac{1}{8}$ lbs.
 30 Catties = 1 Behar = 40 lbs.
 100 " = 1 Picul = $133\frac{3}{8}$ lbs.
 120 " = 1 Shih = 160 lbs.

* The weight of the Tael varies from place to place. In the customs treaties it has been fixed at $1\frac{1}{8}$ oz., av. For transactions in silver, the ounce prices are quoted in Troy Weight (480 grains), while the prices for silk are given in Taels of $1\frac{1}{8}$ oz., av., of $437\frac{1}{2}$ grains each. Quotations on China silks are in Taels per Picul, of $133\frac{3}{8}$ lbs.

Liquid Measures.

- 1 Sheng = 2.176 Pints, (U. S.)
 10 " = 1 Tou = 2.72 Gals. (U. S.)
 $5\frac{1}{2}$ Tou = 1 Hu = 15 gals. (U. S.)
 2 Hu = 1 Tan = 30 Gals. (U. S.)

Linear Measures.

- 1 T'sun = 1.41 in.
 *10 " = 1 Ch'ih = 14.1 in.
 56 " = 1 Kung = 78.96 in.
 5 Ch'ih = 1 Pu = 70.5 in.
 360 Pu = 1 Li = .40057 miles.
 10 Li = 1 Tang Sun = 4.0057 miles.
 25 " = 1 Tu = 100.142 miles.

* The length of the Ch'ih, and the other measures dependent on it varies, from district to district, between 11 in. and 15.8 in. In the customs treaties it has been fixed at 14.1 in.

Dry Measure.

- 1 Picki = 3.22 Bushels (U. S.)

Coinage.

Until recently, the only Chinese coin was the brass cash (60% copper and 40% zinc), with a square hole in the centre. These were put 1,000 on a string. The value of the cash (tong-tsien) is about $\frac{1}{20}$ of a cent.

Accounts are kept in cash, mace, candareens, and taels, these three latter being simply weights of silver. The values are nominally as follows:

10 cash = 1 candareen	=	5.83	grains silver
10 candareens = 1 mace	=	58.33	" "
10 mace = 1 tael	=	583.33	" "
			$1\frac{1}{8}$ oz. av. silver.

Since 1890 China has coined silver dollars and subsidiary pieces. The weight of the dollar is .72 of the tael.

The new Chinese coinage includes the yuan, or dollar, containing 414.4528 grains of pure silver, having a value (at prices of silver for last quarter of 1911) of .4772 cents, and there are subsidiary pieces of $\frac{1}{2}$, $\frac{1}{4}$, and $\frac{1}{10}$ yuan.

There is also a nickel coin of 5 cents, or $\frac{1}{400}$ yuan, and copper coins of 2 cents, 1 cent, 5 mills, and 1 mill, all stated in fractions of the yuan, the 1 mill being but $\frac{1}{1000}$ yuan, or about $\frac{1}{20}$ cent, U. S. gold, thus equalling the value of the cash.

GEORGE W. COLE, JR., PRES'T & TREAS.
CHARLES P. COLE, VICE-PRES'T
WILLIAM S. COLE, SECRETARY

TELEPHONES 2353-2354
P. O. BOX 1814

Standard Silk Dyeing Co.
Skein Silk Dyers

Van Houten & Mill Sts.
Dalton, N. J.

2-Thread

200 Skeins.....15,000 Yards

300 Skeins.....10,000 Yards

400 Skeins..... 7,500 Yards

Lbs. Ozs.	Drams	Deniers	Lbs. Ozs.	Drams	Deniers
18.00	1.53	26.75	21.01	1.79	31.30
18.01	1.54	26.85	21.02	1.79½	31.40
18.02	1.54½	26.94	21.03	1.80	31.49
18.03	1.55	27.03	21.04	1.80½	31.58
18.04	1.55½	27.12	21.05	1.81	31.68
18.05	1.56	27.22	21.06	1.82	31.77
18.06	1.56½	27.31	21.07	1.82½	31.86
18.07	1.57	27.40	21.08	1.83	31.95
18.08	1.57½	27.50	21.09	1.83½	32.05
18.09	1.58	27.59	21.10	1.84	32.14
18.10	1.58½	27.68	21.11	1.84½	32.23
18.11	1.59	27.77	21.12	1.85	32.32
18.12	1.59½	27.87	21.13	1.85½	32.42
18.13	1.60	27.96	21.14	1.86	32.51
18.14	1.60½	28.05	21.15	1.86½	32.60
18.15	1.61	28.15	22.00	1.87	32.70
19.00	1.62	28.24	22.01	1.87½	32.79
19.01	1.62½	28.33	22.02	1.88	32.88
19.02	1.63	28.42	22.03	1.88½	32.98
19.03	1.63½	28.52	22.04	1.89	33.07
19.04	1.64	28.61	22.05	1.89½	33.16
19.05	1.64½	28.70	22.06	1.90	33.26
19.06	1.65	28.80	22.07	1.90½	33.35
19.07	1.65½	28.89	22.08	1.91	33.44
19.08	1.66	28.98	22.09	1.92	33.53
19.09	1.66½	29.07	22.10	1.92½	33.63
19.10	1.67	29.17	22.11	1.93	33.72
19.11	1.67½	29.26	22.12	1.93½	33.81
19.12	1.68	29.35	22.13	1.94	33.91
19.13	1.68½	29.45	22.14	1.94½	34.00
19.14	1.69	29.54	22.15	1.95	34.09
19.15	1.69½	29.63	23.00	1.95½	34.18
20.00	1.70	29.72	23.01	1.96	34.28
20.01	1.70½	29.82	23.02	1.96½	34.37
20.02	1.71	29.91	23.03	1.97	34.46
20.03	1.72	30.00	23.04	1.97½	34.56
20.04	1.72½	30.10	23.05	1.98	34.65
20.05	1.73	30.19	23.06	1.98½	34.74
20.06	1.73½	30.28	23.07	1.99	34.83
20.07	1.74	30.38	23.08	1.99½	34.93
20.08	1.74½	30.47	23.09	2.00	35.02
20.09	1.75	30.56	23.10	2.00½	35.11
20.10	1.75½	30.65	23.11	2.01	35.21
20.11	1.76	30.75	23.12	2.02	35.30
20.12	1.76½	30.84	23.13	2.02½	35.39
20.13	1.77	30.93	23.14	2.03	35.48
20.14	1.77½	31.03	23.15	2.03½	35.58
20.15	1.78	31.12	24.00	2.04	35.67
21.00	1.78½	31.21			

Table prepared by Mr. H. F. Hofer.

P. O. BOXES
PATERSON, N. J. 1606.
HAVERSTRAW, N. Y. 65

ALL SILK FULLY INSURED

L. D. PHONE CONNECTION
PATERSON, N. J.
HAVERSTRAW, N. Y.



PATERSON, N. J.
AND
HAVERSTRAW, N. J.

MAIN OFFICE:
PATERSON, N. J.

F. B. McMANUS, *Pres. and Treas.*

JOHN McMANUS, *Vice-Pres.*

E. J. McCAUGHEY, *Sec'y and Mgr.*

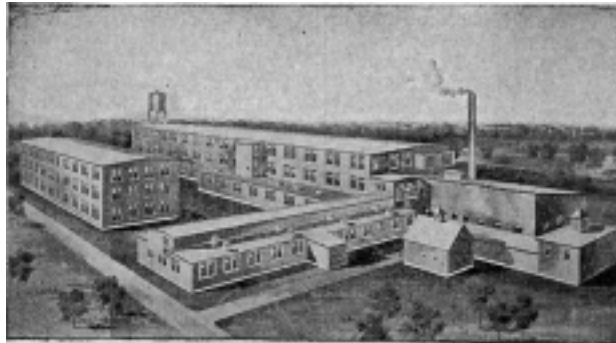
HOME BLEACH AND DYE WORKS

INCORPORATED

**Dyers, Bleachers, and Mercerizers of
Cotton Yarns—in Skein and Warp**

**Clean and Bloomy FAST BLACK for
Silk Goods—the Deep Blue Tone Desired**

- ☐ Pure Bleaching for Piece Dye Work.
- ☐ Fancy Colors Dyed to Match Samples. Special Finish.
- ☐ Special Dyeing of Cotton Yarns for Bengalines, Ottomans, Moirés, Chrystal Reds, Epinglés, and Corded Weaves in Blacks and Colors,



ESTABLISHED 1881

HIGHEST QUALITY OF MERCERIZING

CAPACITY—40,000 POUNDS PER DAY

Office and Works at Pawtucket, Rhode Island

2-Thread

320 Skeins.....10,000 Yards
or 160 Skeins.....20,000 Yards

Lbs. Ozs.	Drams	Deniers	Lbs. Ozs.	Drams	Deniers
18.08	1.48	25.78	21.05	1.70½	29.70
18.09	1.48½	25.86	21.06	1.71	29.78
18.10	1.49	25.95	21.07	1.71½	28.87
18.11	1.49½	26.04	21.08	1.72	29.96
18.12	1.50	26.13	21.09	1.72½	30.04
18.13	1.50½	26.21	21.10	1.73	30.13
18.14	1.51	26.30	21.11	1.73½	30.22
18.15	1.51½	26.39	21.12	1.74	30.31
19.00	1.52	26.47	21.13	1.74½	30.39
19.01	1.52½	26.56	21.14	1.75	30.48
19.02	1.53	26.65	21.15	1.75½	30.57
19.03	1.53½	26.73	22.00	1.76	30.65
19.04	1.54	26.82	22.01	1.76½	30.74
19.05	1.54½	26.91	22.02	1.77	30.83
19.06	1.55	27.00	22.03	1.77½	30.92
19.07	1.55½	27.09	22.04	1.78	31.00
19.08	1.56	27.17	22.05	1.78½	31.09
19.09	1.56½	27.26	22.06	1.79	31.18
19.10	1.57	27.34	22.07	1.79½	31.26
19.11	1.57½	27.43	22.08	1.80	31.35
19.12	1.58	27.52	22.09	1.80½	31.44
19.13	1.58½	27.61	22.10	1.81	31.53
19.14	1.59	27.69	22.11	1.81½	31.61
19.15	1.59½	27.78	22.12	1.82	31.70
20.00	1.60	27.82	22.13	1.82½	31.79
20.01	1.60½	27.95	22.14	1.83	31.87
20.02	1.61	28.04	22.15	1.83½	31.96
20.03	1.61½	28.13	23.00	1.84	32.05
20.04	1.62	28.22	23.01	1.84½	32.13
20.05	1.62½	28.30	23.02	1.85	32.22
20.06	1.63	28.39	23.03	1.85½	32.31
20.07	1.63½	28.48	23.04	1.86	32.40
20.08	1.64	28.56	23.05	1.86½	32.48
20.09	1.64½	28.65	23.06	1.87	32.57
20.10	1.65	28.74	23.07	1.87½	32.66
20.11	1.65½	28.83	23.08	1.88	32.74
20.12	1.66	28.91	23.09	1.88½	32.83
20.13	1.66½	29.00	23.10	1.89	32.92
20.14	1.67	29.09	23.11	1.89½	33.01
20.15	1.67½	29.17	23.12	1.90	33.09
21.00	1.68	29.26	23.13	1.90½	33.18
21.01	1.68½	29.35	23.14	1.91	33.27
21.02	1.69	29.43	23.15	1.91½	33.35
21.03	1.69½	29.52	24.00	1.92	33.44
21.04	1.70	29.61			

Table prepared by Mr. H. F. Hofer.

NATIONAL SILK DYEING COMPANY

Main Office, PATERSON, NEW JERSEY
140 Market Street

New York Salesrooms, 60 University Place
Corner of Tenth Street

Skein Silk Dyeing

of every description for every
class of textile manufacture

Piece Dyeing and Finishing

All silk and silk mixed goods

Printing

SURFACE AND WARP PRINTING

WORKS:

PATERSON, N. J.
DUNDEE LAKE, N. J.

ALLENTOWN, PA.
WILLIAMSPORT, PA.

3-Thread

Skeins Per Bundle..... 240..... 360

Yards Per Skein.....7,500.....5,000

Lbs. Ozs.	Drams	Deniers	Lbs. Ozs.	Drams	Deniers
15.12.....	2.24.....	39.02	18.07.....	2.62.....	45.65
15.13.....	2.25.....	39.13	18.08.....	2.63.....	45.80
15.14.....	2.25.....	39.25	18.09.....	2.64.....	45.95
15.15.....	2.26.....	39.36	18.10.....	2.65.....	46.10
16.00.....	2.27.....	39.54	18.11.....	2.66.....	46.25
16.01.....	2.28.....	39.71	18.12.....	2.66.....	46.40
16.02.....	2.29.....	39.92	18.13.....	2.67.....	46.56
16.03.....	2.30.....	40.04	18.14.....	2.68.....	46.72
16.04.....	2.31.....	40.20	18.15.....	2.69.....	46.86
16.05.....	2.32.....	40.36	19.00.....	2.70.....	47.03
16.06.....	2.33.....	40.54	19.01.....	2.71.....	47.18
16.07.....	2.34.....	40.70	19.02.....	2.72.....	47.33
16.08.....	2.34.....	40.85	19.03.....	2.73.....	47.50
16.09.....	2.35.....	41.00	19.04.....	2.74.....	47.65
16.10.....	2.36.....	41.17	19.05.....	2.75.....	47.80
16.11.....	2.37.....	41.33	19.06.....	2.76.....	48.05
16.12.....	2.38.....	41.50	19.07.....	2.77.....	48.20
16.13.....	2.39.....	41.67	19.08.....	2.78.....	48.35
16.14.....	2.40.....	41.83	19.09.....	2.79.....	48.50
16.15.....	2.41.....	42.00	19.10.....	2.80.....	48.65
17.00.....	2.42.....	42.16	19.11.....	2.80.....	48.80
17.01.....	2.43.....	42.32	19.12.....	2.81.....	48.95
17.02.....	2.44.....	42.48	19.13.....	2.82.....	49.10
17.03.....	2.45.....	42.64	19.14.....	2.83.....	49.20
17.04.....	2.46.....	42.94	19.15.....	2.84.....	49.30
17.06.....	2.47.....	43.10	20.00.....	2.85.....	49.46
17.07.....	2.48.....	43.26	20.01.....	2.86.....	49.61
17.08.....	2.49.....	43.42	20.02.....	2.37.....	49.82
17.09.....	2.50.....	43.58	20.04.....	2.89.....	49.97
17.10.....	2.51.....	43.74	20.05.....	2.90.....	50.14
17.11.....	2.52.....	43.90	20.06.....	2.90.....	50.30
17.12.....	2.52.....	44.05	20.07.....	2.91.....	50.45
17.13.....	2.53.....	44.20	20.08.....	2.92.....	50.60
17.14.....	2.54.....	44.35	20.09.....	2.93.....	50.75
17.15.....	2.55.....	44.49	20.10.....	2.94.....	50.90
18.00.....	2.56.....	44.60	20.11.....	2.95.....	51.06
18.01.....	2.57.....	44.75	20.12.....	2.96.....	51.22
18.02.....	2.58.....	44.90	20.13.....	2.97.....	51.38
18.03.....	2.59.....	45.05	20.14.....	2.98.....	51.55
18.04.....	2.60.....	45.20	20.15.....	2.99.....	51.72
18.05.....	2.60.....	45.35	21.00.....	3.00.....	51.89
18.06.....	2.61.....	45.50			

Table prepared by Mr. H. F. Hofer.

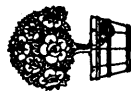
UNITED PIECE DYE WORKS

LODI, NEW JERSEY

Dyers and Finishers in the Piece of

All Silk and Silk Mixed Goods

FRED. BLUM, President
THEODORE BOETTGER, Vice-President
ALBERT BLUM, Treasurer
ROBERT BOETTGER, Secretary
CHARLES BLUM, Assistant Treasurer



New York Office
132 Madison Avenue
TELEPHONE CONNECTION

3-Thread

200 Skeins.....10,000 Yards

400 Skeins..... 5,000 Yards

Lbs. Ozs.	Drams	Deniers	Lbs. Ozs.	Drams	Deniers
17.08	2.21	39.02	20.13	2.66	46.40
17.09	2.24	39.15	20.14	2.67	46.54
17.10	2.25	39.29	20.15	2.68	46.68
17.11	2.26	39.43	21.00	2.68	46.82
17.12	2.27	39.57	21.01	2.69	46.96
17.13	2.28	39.71	21.02	2.70	47.00
17.14	2.28	39.85	21.03	2.71	47.23
17.15	2.29	39.99	21.04	2.72	47.37
18.00	2.30	40.13	21.05	2.72	47.51
18.01	2.31	40.27	21.06	2.73	47.65
18.02	2.32	40.41	21.07	2.74	47.79
18.03	2.32	40.55	21.08	2.75	47.93
18.04	2.33	40.69	21.09	2.76	48.07
18.05	2.34	40.83	21.10	2.76	48.21
18.06	2.35	40.97	21.11	2.77	48.35
18.07	2.36	41.10	21.12	2.78	48.49
18.08	2.36	41.24	21.13	2.79	48.63
18.09	2.37	41.38	21.14	2.80	48.77
18.10	2.38	41.52	21.15	2.80	48.91
18.11	2.39	41.66	22.00	2.81	49.04
18.12	2.40	41.80	22.01	2.82	49.18
18.13	2.40	41.94	22.02	2.83	49.32
18.14	2.41	42.08	22.03	2.84	49.46
18.15	2.42	42.22	22.04	2.84	49.60
19.00	2.43	42.36	22.05	2.85	49.74
19.01	2.44	42.50	22.06	2.86	49.88
19.02	2.44	42.64	22.07	2.87	50.02
19.03	2.45	42.78	22.08	2.88	50.16
19.04	2.46	42.92	22.09	2.88	50.30
19.05	2.47	43.05	22.10	2.89	50.44
19.06	2.48	43.19	22.11	2.90	50.58
19.07	2.48	43.33	22.12	2.91	50.72
19.08	2.49	43.47	22.13	2.92	50.86
19.09	2.50	43.61	22.14	2.92	50.99
19.10	2.51	43.75	22.15	2.93	51.13
19.11	2.52	43.89	23.00	2.94	51.27
19.12	2.52	44.03	23.01	2.95	51.41
19.13	2.53	44.17	23.02	2.96	51.55
19.14	2.54	44.31	23.03	2.96	51.69
19.15	2.55	44.45	23.04	2.97	51.83
20.00	2.56	44.59	23.05	2.98	51.97
20.01	2.56	44.73	23.06	2.99	52.11
20.02	2.57	44.87	23.07	3.00	52.25
20.03	2.58	45.00	23.08	3.00	52.39
20.04	2.59	45.14	23.09	3.01	52.53
20.05	2.60	45.28	23.10	3.02	52.67
20.06	2.60	45.42	23.11	3.03	52.81
20.07	2.61	45.56	23.12	3.04	52.95
20.08	2.62	45.70	23.13	3.04	53.08
20.09	2.63	45.84	23.14	3.05	53.22
20.10	2.64	45.98	23.15	3.06	53.36
20.11	2.64	46.12	24.00	3.07	53.50
20.12	2.65	46.26			

Table prepared by Mr. H. F. Hofer.

— ESTABLISHED 1879 —

CREW'S

Silk Finishing and Piece Dye Works

ALFRED CREW, Proprietor

PATERSON, N. J.

Finishing.

Tie Silks of all descriptions, both All-Silk and Cotton-and-Silk, in all widths. Crefeld Finish a Specialty.

All Silk and Cotton-and-Silk Linings, Serges, Mervellieux, Satins Duchesse, and Cotton - Back Satins. Especially equipped for Finishing 64in. Auto-Satins, and Tapestry of every description. Plain and Fancy Taffetas, Chiffon Taffetas, Messalines, Peau de Cygne, Peau de Soie, Armures, Failles, Bengalines, Brocades, Surahs and Gros Grain.

Piece Dyeing and Finishing.

All-Silk and Silk-Mixed Goods up to 64 inches,
Habutais, Charmeuse,
Brocade, Satin Brocade, Crépe-de-Chine, Mulls.

Moirés of every Description. Waterproofing.
Especially equipped for the Dyeing and Finishing, or
the Finishing only, of Extra Wide Goods.

All Goods Fully Covered by Insurance.

SUSSEX PRINT WORKS

NEW YORK OFFICE
119 East 27th Street



TELEPHONE
8125 Mad. Sq.

Piece Dyeing, Printing and Finishing of all Silk and
Silk Mixed Goods, Velvets Plush, Etc.

WARP PRINTING A SPECIALTY

The New York Watering Company

NEW YORK CITY

J. SULZBACH, Prop.

ORIGINATOR

OF THE RIBBON PRINTING MACHINE
—AND—
SINGLE BEAM WARP PRINTING FOR RIBBONS

WE ARE SPECIALISTS IN THE

Dyeing	Finishing
Printing	Embossing
Moiréing	Shirring

—OF—

Ribbons	Chiffons	Beltings
Silks	Elastic	Leather Goods
Velvets	Laces	Nets, etc.

Surface and Warp Printing



ALWAYS A STEP AHEAD

3-Thread

300 Skeins.....7,500 Yards

Lbs. Ozs.	Drams	Deniers	Lbs. Ozs.	Drams	Deniers
19.10.....	2.23.....	38.89	21.14.....	2.48.....	43.28
19.11.....	2.24.....	39.02	21.15.....	2.49.....	43.40
19.12.....	2.24.....	39.13	22.00.....	2.49.....	43.52
19.13.....	2.25.....	39.25	22.01.....	2.50.....	43.64
19.14.....	2.26.....	39.37	22.02.....	2.51.....	43.77
19.15.....	2.26.....	39.50	22.03.....	2.52.....	43.89
20.00.....	2.27.....	39.62	22.04.....	2.52.....	44.01
20.01.....	2.28.....	39.74	22.05.....	2.53.....	44.13
20.02.....	2.28.....	39.86	22.06.....	2.54.....	44.25
20.03.....	2.29.....	39.98	22.07.....	2.54.....	44.50
20.04.....	2.30.....	40.11	22.08.....	2.55.....	44.50
20.05.....	2.31.....	40.23	22.09.....	2.56.....	44.62
20.06.....	2.31.....	40.35	22.10.....	2.57.....	44.74
20.07.....	2.32.....	40.47	22.11.....	2.58.....	44.86
20.08.....	2.33.....	40.59	22.12.....	2.59.....	44.99
20.09.....	2.33.....	40.72	22.13.....	2.60.....	45.11
20.10.....	2.34.....	40.84	22.14.....	2.60.....	45.23
20.11.....	2.35.....	40.96	22.15.....	2.61.....	45.35
20.12.....	2.35.....	41.08	23.00.....	2.62.....	45.85
20.13.....	2.36.....	41.20	23.01.....	2.63.....	45.60
20.14.....	2.37.....	41.33	23.02.....	2.63.....	45.72
20.15.....	2.38.....	41.45	23.03.....	2.64.....	45.84
21.00.....	2.38.....	41.57	23.04.....	2.65.....	45.96
21.01.....	2.39.....	41.69	23.05.....	2.65.....	46.08
21.02.....	2.40.....	41.81	23.06.....	2.66.....	46.21
21.03.....	2.40.....	41.94	23.07.....	2.67.....	46.33
21.04.....	2.41.....	42.06	23.08.....	2.67.....	46.45
21.05.....	2.42.....	42.18	23.09.....	2.68.....	46.57
21.06.....	2.42.....	42.30	23.10.....	2.69.....	46.69
21.07.....	2.43.....	42.42	23.11.....	2.70.....	46.82
21.08.....	2.44.....	42.55	23.12.....	2.70.....	46.94
21.09.....	2.45.....	42.67	23.13.....	2.71.....	47.06
21.10.....	2.45.....	42.79	23.14.....	2.72.....	47.18
21.11.....	2.46.....	42.91	23.15.....	2.72.....	47.30
21.12.....	2.47.....	43.03	24.00.....	2.73.....	47.43
21.13.....	2.47.....	43.16			

Table prepared by Mr. H. F. Hofer.

Oriental Silk Printing Company

HALEDON, (Paterson) N. J.

Warp and Surface Printing for Dress Silks,
Ribbons and all classes of Silk and mixed goods.

Converting plain fabrics to the most
beautiful Artistic Effects.

PIECE DYEING.

Full information, Samples, Designs, latest
foreign ideas, etc., at their

NEW YORK OFFICE
EMMET BUILDING
95 MADISON AVE., Cor. 29th St.

New York Telephone, Mad. Sq. 9434
Haledon Telephone, Paterson 3171

3-Thread

Skeins Per Bundle..... 240..... 360..... 480
 Yards Per Skein.....10,000.....7,500.....5,000

Lbs. Ozs.	Drams	Deniers	Lbs. Ozs.	Drams	Deniers
21.00	2.24	39.02	24.09	2.60	45.59
21.01	2.24	39.13	24.10	2.61	45.70
21.02	2.25	39.25	24.11	2.62	45.82
21.03	2.26	39.36	24.12	2.62	45.93
21.04	2.26	39.48	24.13	2.62	46.05
21.05	2.27	39.59	24.14	2.64	46.16
21.06	2.28	39.71	24.15	2.65	46.28
21.07	2.28	39.82	25.00	2.66	46.39
21.08	2.29	39.93	25.01	2.66	46.50
21.09	2.30	40.04	25.02	2.67	46.62
21.10	2.30	40.16	25.03	2.68	46.73
21.11	2.31	40.27	25.04	2.68	46.85
21.12	2.31	40.39	25.05	2.69	46.97
21.13	2.32	40.50	25.06	2.70	47.08
21.14	2.33	40.62	25.07	2.70	47.20
21.15	2.33	40.74	25.08	2.71	47.31
22.00	2.34	40.85	25.09	2.72	47.43
22.01	2.35	40.96	25.10	2.72	47.55
22.02	2.35	41.07	25.11	2.73	47.67
22.03	2.36	41.19	25.12	2.74	47.78
22.04	2.37	41.42	25.13	2.75	47.90
22.05	2.37	41.53	25.14	2.75	48.00
22.06	2.38	41.53	25.15	2.76	48.12
22.07	2.39	41.65	26.00	2.77	48.24
22.08	2.39	41.76	26.01	2.77	48.35
22.09	2.40	41.88	26.02	2.78	48.47
22.10	2.41	41.99	26.03	2.79	48.58
22.11	2.41	42.10	26.04	2.79	48.69
22.12	2.42	42.21	26.05	2.80	48.82
22.13	2.43	42.33	26.06	2.81	48.93
22.14	2.43	42.44	26.07	2.81	49.05
22.15	2.44	42.56	26.08	2.82	49.17
23.00	2.45	42.67	26.09	2.83	49.28
23.01	2.46	42.79	26.10	2.84	49.40
23.02	2.46	42.90	26.11	2.84	49.51
23.03	2.47	43.02	26.12	2.85	49.63
23.04	2.48	43.14	26.13	2.86	49.74
23.05	2.48	43.25	26.14	2.87	49.86
23.06	2.49	43.37	26.15	2.87	49.97
23.07	2.50	43.48	27.00	2.88	50.08
23.08	2.50	43.60	27.01	2.88	50.20
23.09	2.51	43.71	27.02	2.89	50.32
23.10	2.52	43.83	27.03	2.89	50.44
23.11	2.52	43.95	27.04	2.90	50.55
23.12	2.53	44.07	27.05	2.91	50.67
23.13	2.63	44.05	27.06	2.92	50.78
23.14	2.54	44.30	27.07	2.92	50.90
23.15	2.55	44.41	27.08	2.93	50.02
24.00	2.56	44.50	27.09	2.94	51.13
24.01	2.56	44.64	27.10	2.94	51.24
24.02	2.57	44.76	27.11	2.95	51.36
24.03	2.57	44.87	27.12	2.96	51.48
24.04	2.58	45.00	27.13	2.97	51.60
24.05	2.58	45.12	27.14	2.97	51.72
24.06	2.59	45.24	27.15	2.98	51.83
24.07	2.59	45.36	28.00	2.99	51.94
24.08	2.60	45.47	28.01	3.00	52.06

Table prepared by Mr. H. F. Hofer.

H. W. BOETTGER, President ROBERT WYDER, Treas.
RUDOLF WYDER, Jr., Vice-Pres. ROBT. BOETTGER, Secy.

Silk Finishing Company of America

Finishers of all kinds of Broad Silks
and Cotton-back Satins

All Styles of Moirés

Main Office:

**137 Madison Avenue
New York**

4-Thread

150 Skeins.....10,000 Yards
 200 Skeins..... 7,500 Yards
 or 300 Skeins..... 5,000 Yards

Lbs. Ozs.	Drams	Deniers	Lbs. Ozs.	Drams	Deniers
17.08	2.98	52.02	20.13	3.56	62.04
17.09	2.99	52.21	20.14	3.57	62.23
17.10	3.00	52.40	20.15	3.58	62.42
17.11	3.01	52.59	21.00	3.59	62.61
17.12	3.03	52.78	21.01	3.60	62.80
17.13	3.04	52.97	21.02	3.61	62.98
17.14	3.05	53.16	21.03	3.62	63.17
17.15	3.06	53.34	21.04	3.63	63.36
18.00	3.07	53.53	21.05	3.64	63.55
18.01	3.08	53.72	21.06	3.66	63.74
18.02	3.09	53.91	21.07	3.67	63.93
18.03	3.10	54.10	21.08	3.68	64.12
18.04	3.11	54.29	21.09	3.69	64.31
18.05	3.12	54.48	21.10	3.70	64.50
18.06	3.13	54.67	21.11	3.71	64.69
18.07	3.14	54.86	21.12	3.72	64.87
18.08	3.16	55.05	21.13	3.73	65.02
18.09	3.17	55.23	21.14	3.74	65.21
18.10	3.18	55.42	21.15	3.75	65.40
18.11	3.19	55.61	22.00	3.76	65.58
18.12	3.20	55.80	22.01	3.78	65.77
18.13	3.21	55.99	22.02	3.79	65.95
18.14	3.22	56.18	22.03	3.80	66.14
18.15	3.23	56.37	22.04	3.81	66.32
19.00	3.24	56.56	22.05	3.82	66.51
19.01	3.25	56.75	22.06	3.83	66.70
19.02	3.26	56.94	22.07	3.84	66.88
19.03	3.28	57.12	22.08	3.85	67.07
19.04	3.29	57.31	22.09	3.86	67.25
19.05	3.30	57.50	22.10	3.87	67.44
19.06	3.31	57.69	22.11	3.88	67.62
19.07	3.32	57.88	22.12	3.89	67.81
19.08	3.33	58.07	22.13	3.91	68.00
19.09	3.34	58.26	22.14	3.92	68.18
19.10	3.35	58.45	22.15	3.93	68.37
19.11	3.36	58.64	23.00	3.94	68.55
19.12	3.37	58.83	23.01	3.95	68.74
19.13	3.38	59.02	23.02	3.96	68.92
19.14	3.39	59.20	23.03	3.97	69.11
19.15	3.41	59.39	23.04	3.98	69.29
20.00	3.42	59.58	23.05	3.99	69.48
20.01	3.43	59.77	23.06	4.00	69.67
20.02	3.44	59.96	23.07	4.01	69.85
20.03	3.45	60.15	23.08	4.02	70.04
20.04	3.46	60.34	23.09	4.03	70.22
20.05	3.47	60.53	23.10	4.04	70.41
20.06	3.48	60.72	23.11	4.05	70.60
20.07	3.49	60.91	23.12	4.06	70.79
20.08	3.50	61.09	23.13	4.07	70.98
20.09	3.51	61.28	23.14	4.08	71.16
20.10	3.53	61.47	23.15	4.09	71.34
20.11	3.54	61.66	24.00	4.10	71.51
20.12	3.55	61.85			

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INDEPENDENT
SILK FINISHING PLANT
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INCORPORATED

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515-519 W. 26th St.
New York

Finishers of all kinds
of Broad Silks and
Cotton-back Satins

All Goods Insured Against Loss By Fire

4-Thread

160 Skeins.....10,000 Yards

320 Skeins..... 5,000 Yards

Lbs. Ozs.	Drams	Deniers	Lbs. Ozs.	Drams	Deniers
18.08	2.96	51.56	21.05	3.41	59.40
18.09	2.97	51.72	21.06	3.42	59.56
18.10	2.98	51.90	21.07	3.43	59.74
18.11	2.99	52.08	21.08	3.44	59.92
18.12	3.00	52.26	21.09	3.45	60.08
18.13	3.01	52.42	21.10	3.46	60.26
18.14	3.02	52.60	21.11	3.47	60.44
18.15	3.03	52.78	21.12	3.48	60.62
19.00	3.04	52.94	21.13	3.49	60.78
19.01	3.05	53.12	21.14	3.50	60.96
19.02	3.06	53.30	21.15	3.51	61.14
19.03	3.07	53.46	22.00	3.52	61.30
19.04	3.08	53.64	22.01	3.53	61.48
19.05	3.09	53.82	22.02	3.54	61.70
19.06	3.10	54.00	22.03	3.55	61.84
19.07	3.11	54.16	22.04	3.56	62.00
19.08	3.12	54.34	22.05	3.57	62.18
19.09	3.13	54.52	22.06	3.58	62.36
19.10	3.14	54.68	22.07	3.59	62.52
19.11	3.15	54.86	22.08	3.60	62.70
19.12	3.16	55.04	22.09	3.61	62.88
19.13	3.17	55.22	22.10	3.62	63.06
19.14	3.18	55.38	22.11	3.63	63.22
19.15	3.19	55.56	22.12	3.64	63.40
20.00	3.20	55.64	22.13	3.65	63.58
20.01	3.21	55.90	22.14	3.66	63.74
20.02	3.22	56.08	22.15	3.67	63.92
20.03	3.23	56.26	23.00	3.68	64.10
20.04	3.24	56.44	23.01	3.69	64.26
20.05	3.25	56.60	23.02	3.70	64.44
20.06	3.26	56.78	23.03	3.71	64.62
20.07	3.27	56.96	23.04	3.72	64.80
20.08	3.28	57.12	23.05	3.73	64.96
20.09	3.29	57.30	23.06	3.74	65.14
20.10	3.30	57.48	23.07	3.75	65.32
20.11	3.31	57.66	23.08	3.76	65.48
20.12	3.32	57.82	23.09	3.77	65.66
20.13	3.33	58.00	23.10	3.78	65.84
20.14	3.34	58.18	23.11	3.79	66.02
20.15	3.35	58.34	23.12	3.80	66.18
21.00	3.36	58.52	23.13	3.81	66.36
21.01	3.37	58.70	23.14	3.82	66.54
21.02	3.38	58.86	23.15	3.83	66.70
21.03	3.39	59.04	24.00	3.84	66.88
21.04	3.40	59.22			

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WINDING WARPING QUILLING

PRESCOTT & WAYWELL

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WE INVITE INQUIRIES.
WE KEEP ALL GOODS FULLY INSURED

Preparatory Work of every sort on Commission.

All kinds of Warping, on Dyed, Raw, or Spun Silks
Warps prepared for Printing, and crossings woven in

Warps perfectly made and thoroughly cleaned.

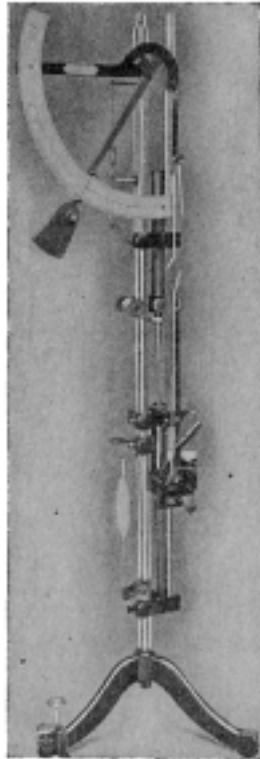
Warps of Extra Length Supplied.
Winding and Quilling arrangements of the very best.

THE QUALITY OF OUR WORK IS OF THE HIGHEST.
OUR CUSTOMERS ARE HOUSES OF THE BEST CLASS.
OUR BUSINESS HAS BEEN LONG ESTABLISHED.
OUR PRICES ARE MOST MODERATE.

LET US FIGURE ON YOUR REQUIREMENTS

ALFRED SUTER TEXTILE ENGINEER

200 FIFTH AVE., NEW YORK



AUTOMATIC STRENGTH AND
ELASTICITY TESTER
FOR YARN

IMPORTER OF
**BAER'S YARN AND
CLOTH TESTING
APPARATUS**

SUCH AS

Direct Yarn Numbering Scales
—Reels—Evenness Testers—
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—Conditioning Ovens : : :

REED ENTERING
MACHINES

Schappe Yarns of the *Fil-
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Skein, Broad Silk, Ribbon Dyeing
and Finishing Machines of
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and the
**Schmid Brothers' Silk
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ming Machine.**



NEW TWIST TESTER WITH TAKE-UP REGISTER AND MAGNIFYING GLASS

STORAGE OF SILK AND SILK PRODUCTS

The only Warehouse in New York built especially for and handling Raw Silk and Silk Products exclusively.

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4-Thread

180 Skeins.....10,000 Yards
 240 Skeins..... 7,500 Yards
 360 Skeins..... 5,000 Yards

Lbs. Ozs.	Drams	Deniers	Lbs. Ozs.	Drams	Deniers
21.00	2.98	52.02	24.15	3.56	62.04
21.01	2.99	52.21	25.01	3.57	62.23
21.02	3.00	52.40	25.02	3.58	62.42
21.03	3.01	52.59	25.03	3.59	62.61
21.05	3.03	52.78	25.04	3.60	62.80
21.06	3.04	52.97	25.05	3.61	62.98
21.07	3.05	53.16	25.07	3.62	63.17
21.08	3.06	53.34	25.08	3.63	63.36
21.09	3.07	53.53	25.09	3.64	63.55
21.11	3.08	53.72	25.10	3.66	63.70
21.12	3.09	53.91	25.11	3.67	63.93
21.13	3.10	54.10	25.13	3.68	64.12
21.14	3.11	54.29	25.14	3.69	64.31
21.15	3.12	54.48	25.15	3.70	64.50
22.01	3.13	54.67	26.00	3.71	64.69
22.02	3.14	54.86	26.01	3.72	64.87
22.03	3.16	55.05	26.03	3.73	65.02
22.04	3.17	55.23	26.04	3.74	65.21
22.05	3.18	55.42	26.05	3.75	65.40
22.07	3.19	55.61	26.06	3.76	65.58
22.08	3.20	55.80	26.07	3.78	65.77
22.09	3.21	55.99	26.09	3.79	65.95
22.10	3.22	56.18	26.10	3.80	66.14
22.11	3.23	56.37	26.11	3.81	66.32
22.13	3.24	56.56	26.12	3.82	66.51
22.14	3.25	56.75	26.13	3.83	66.70
22.15	3.26	56.94	26.15	3.84	66.88
23.00	3.28	57.12	27.00	3.85	67.07
23.01	3.29	57.31	27.01	3.86	67.25
23.03	3.30	57.50	27.02	3.87	67.44
23.04	3.31	57.69	27.03	3.88	67.62
23.05	3.32	57.88	27.05	3.80	67.81
23.06	3.33	58.07	27.06	3.91	68.00
23.07	3.34	58.26	27.07	3.92	68.18
23.09	3.35	58.45	27.08	3.93	68.37
23.10	3.36	58.64	27.09	3.94	68.55
23.11	3.37	58.83	27.11	3.95	68.74
23.12	3.38	59.02	27.12	3.96	68.92
23.13	3.39	59.20	27.13	3.97	69.11
23.15	3.41	59.39	27.14	3.98	69.29
24.00	3.42	59.58	27.15	3.99	69.48
24.01	3.43	59.77	28.01	4.00	69.67
24.02	3.44	59.96	28.02	4.01	69.85
24.03	3.45	60.15	28.03	4.02	70.04
24.05	3.46	60.34	28.04	4.03	70.22
24.06	3.47	60.53	28.05	4.04	70.41
24.07	3.48	60.72	28.07	4.05	70.60
24.08	3.49	60.91	28.08	4.06	70.79
24.09	3.50	61.09	28.09	4.07	70.98
24.11	3.51	61.28	28.10	4.08	71.16
24.12	3.53	61.47	28.11	4.09	71.34
24.13	3.54	61.66	28.13	4.10	71.51
24.14	3.55	61.85			

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MERCANTILE WAREHOUSE CO.

Fire Proof Silk Storage

Raw Silk Insurance \$1.19 per \$1.000 per Year

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421-427 GREENWICH STREET

Automatic Sprinklers

Total Supervision

Fireproof Warehouses

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- 36 Laight Street
- 59-65 Laight Street
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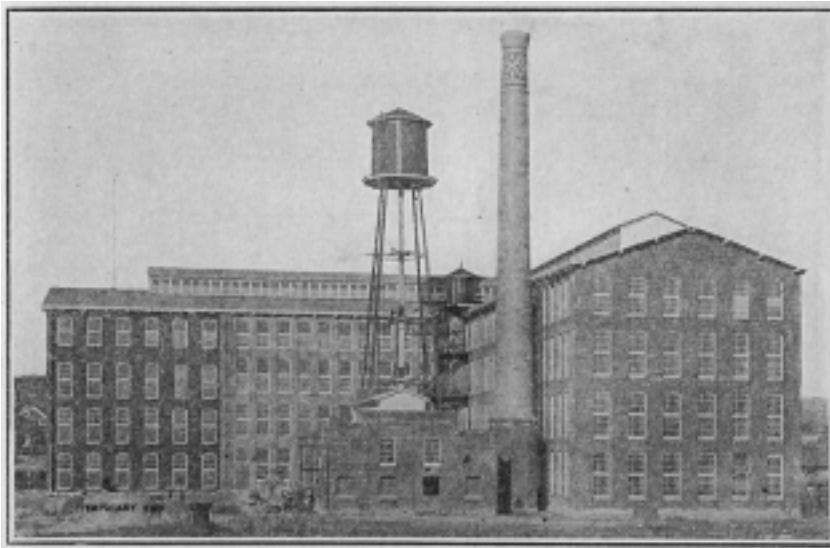
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successful experience.**

5-Thread

150 Skeins.....10,000 Yards
 200 Skeins..... 7,500 Yards
 or 300 Skeins..... 5,000 Yards

Lbs. Ozs.	Drams	Deniers	Lbs. Ozs.	Drams	Deniers
21.14	3.73	65.02	23.08	4.01	69.85
21.15	3.74	65.21	23.09	4.02	70.04
22.00	3.75	65.40	23.10	4.03	70.22
22.01	3.76	65.58	23.11	4.04	70.41
22.02	3.77	65.77	23.12	4.05	70.60
22.03	3.78	65.95	23.13	4.06	70.79
22.04	3.79	66.14	23.14	4.07	70.98
22.05	3.80	66.32	23.15	4.08	71.16
22.06	3.81	66.51	24.00	4.10	71.35
22.07	3.82	66.70	24.01	4.11	71.53
22.08	3.83	66.88	24.02	4.12	71.72
22.09	3.85	67.07	24.03	4.13	71.90
22.10	3.86	67.25	24.04	4.14	72.09
22.11	3.87	67.44	24.05	4.15	72.28
22.12	3.88	67.62	24.06	4.16	72.46
22.13	3.89	67.81	24.07	4.17	72.65
22.14	3.90	68.00	24.08	4.19	72.83
22.15	3.91	68.18	24.09	4.20	73.02
23.00	3.92	68.37	24.10	4.21	73.20
23.01	3.93	68.55	24.11	4.22	73.39
23.02	3.94	68.74	24.12	4.23	73.58
23.03	3.95	68.92	24.13	4.24	73.76
23.04	3.96	69.11	24.14	4.25	73.96
23.05	3.97	69.29	24.15	4.26	74.14
23.06	3.98	69.48	25.00	4.27	74.34
23.07	3.99	69.67			

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EFFICIENCY

WE ASSIST YOU TO ATTAIN IT IN YOUR INDUSTRY

Our procedure is divided into—

AIMS, ACTION, ACHIEVEMENT

The Ideals :

1. That all activity is subject to controlling underlying principles.
2. That consistent application of those principles brings efficient results.

The Plan of Action :

1. To study and analyze the problem in detail.
2. To deduce therefrom the underlying cause of the inefficiency with all contributing facts.
3. To record the details and the deductions.
4. To determine the remedy suited to eliminate the cause.
5. To apply the remedy.
6. To achieve the efficient result.

The Achievement is the Fair Deal :

1. AS TO MANUFACTURERS

- (a) To increase Output.
- (b) To lessen unit costs.

2. AS TO WORKMEN

- (a) To lessen toil.
- (b) To increase earnings per hour.
- (c) To employ more men.

3. AS TO CUSTOMERS

- (a) To give better quality with greater punctuality.
- (b) To lessen the price.
- (c) To increase total purchases

We publish a number of pamphlets by Harrington Emerson which further define our Ideals and Methods.

They will be sent to members of the silk industry and their friends upon application,

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The keenness of competition in modern business demands, as never before, Scientific Organization, Comprehensive Methods of Control, Sound Policies, Precision in Accounting, Accurate and Complete Records, Exactitude of Cost Calculation, and a Knowledge of the most approved Methods of Management, Manufacture and Sale.

No manager so experienced but that he can still learn much to advantage.

No mill so successful but that, in many directions, its efficiency could be still further increased.

No mill so unsuccessful but that, if solvent, it could be put upon a profit-making basis.

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Efficiency and Economy

In your boiler room must be based on the positive values in the fuel used,

High Heat Units and Low Ash.

Low volatile semi-bituminous coal can be burned without injury to your product and will give you

Efficiency and Economy.

Such coals cost materially less money and contain considerably more heat units than anthracite coals, thus giving

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No. 1 BROADWAY, NEW YORK

Scale of Lengths, per Pound, of Various Sizes in Drams per 1,000 Yards

Drams	Yards	Drams	Yards	Drams	Yards	Drams	Yards	Drams	Yards	Drams	Yards
1.20	.213,333	2.00	.128,000	2.80	.91,428	3.60	.71,111	4.40	.58,181	5.20	.49,239
1.21	.211,570	2.01	.127,363	2.81	.91,103	3.61	.70,914	4.41	.58,049	5.21	.49,136
1.22	.209,836	2.02	.126,732	2.82	.90,750	3.62	.70,718	4.42	.57,918	5.22	.49,042
1.23	.208,130	2.03	.126,108	2.83	.90,459	3.63	.70,523	4.43	.57,787	5.23	.48,948
1.24	.206,451	2.04	.125,494	2.84	.90,150	3.64	.70,357	4.44	.57,657	5.24	.48,854
1.25	.205,200	2.05	.124,878	2.85	.89,824	3.65	.70,186	4.45	.57,528	5.25	.48,761
1.26	.203,174	2.06	.124,223	2.86	.89,510	3.66	.69,945	4.46	.57,399	5.26	.48,669
1.27	.201,574	2.07	.123,671	2.87	.89,198	3.67	.69,754	4.47	.57,270	5.27	.48,569
1.28	.200,000	2.08	.123,076	2.88	.88,888	3.68	.69,565	4.48	.57,142	5.28	.48,484
1.29	.198,372	2.09	.122,488	2.89	.88,581	3.69	.69,378	4.49	.57,017	5.29	.48,412
1.30	.196,925	2.10	.121,904	2.90	.88,275	3.70	.69,189	4.50	.56,889	5.30	.48,301
1.31	.195,419	2.11	.121,327	2.91	.87,972	3.71	.69,002	4.51	.56,762	5.31	.48,210
1.32	.193,939	2.12	.120,754	2.92	.87,671	3.72	.68,817	4.52	.56,637	5.32	.48,130
1.33	.192,481	2.13	.120,187	2.93	.87,372	3.73	.68,632	4.53	.56,512	5.33	.48,030
1.34	.191,044	2.14	.119,626	2.94	.87,074	3.74	.68,449	4.54	.56,387	5.34	.47,940
1.35	.189,629	2.15	.119,069	2.95	.86,779	3.75	.68,266	4.55	.56,263	5.35	.47,850
1.36	.188,235	2.16	.118,518	2.96	.86,486	3.76	.68,085	4.56	.56,140	5.36	.47,760
1.37	.186,861	2.17	.117,972	2.97	.86,195	3.77	.67,904	4.57	.56,017	5.37	.47,672
1.38	.185,507	2.18	.117,431	2.98	.85,906	3.78	.67,724	4.58	.55,895	5.38	.47,583
1.39	.184,172	2.19	.116,894	2.99	.85,618	3.79	.67,546	4.59	.55,773	5.39	.47,495
1.40	.182,857	2.20	.116,368	3.00	.85,333	3.80	.67,363	4.60	.55,652	5.40	.47,407
1.41	.181,560	2.21	.115,837	3.01	.85,049	3.81	.67,181	4.61	.55,531	5.41	.47,319
1.42	.180,281	2.22	.115,315	3.02	.84,768	3.82	.67,015	4.62	.55,411	5.42	.47,232
1.43	.179,020	2.23	.114,798	3.03	.84,484	3.83	.66,840	4.63	.55,291	5.43	.47,145
1.44	.177,777	2.24	.114,281	3.04	.84,210	3.84	.66,666	4.64	.55,172	5.44	.47,058
1.45	.176,551	2.25	.113,777	3.05	.83,934	3.85	.66,493	4.65	.55,053	5.45	.46,972
1.46	.175,342	2.26	.113,274	3.06	.83,660	3.86	.66,321	4.66	.54,935	5.46	.46,886
1.47	.174,149	2.27	.112,775	3.07	.83,387	3.87	.66,149	4.67	.54,817	5.47	.46,800
1.48	.172,972	2.28	.112,280	3.08	.83,110	3.88	.65,979	4.68	.54,700	5.48	.46,715
1.49	.171,819	2.29	.111,790	3.09	.82,848	3.89	.65,809	4.69	.54,584	5.49	.46,630
1.50	.170,666	2.30	.111,304	3.10	.82,580	3.90	.65,641	4.70	.54,468	5.50	.46,546
1.51	.169,609	2.31	.110,822	3.11	.82,314	3.91	.65,470	4.71	.54,352	5.51	.46,460
1.52	.168,421	2.32	.110,387	3.12	.82,051	3.92	.65,300	4.72	.54,237	5.52	.46,376
1.53	.167,246	2.33	.109,871	3.13	.81,789	3.93	.65,139	4.73	.54,122	5.53	.46,296
1.54	.166,233	2.34	.109,401	3.14	.81,528	3.94	.64,974	4.74	.54,008	5.54	.46,209
1.55	.165,161	2.35	.108,936	3.15	.81,269	3.95	.64,810	4.75	.53,894	5.55	.46,126
1.56	.164,103	2.36	.108,474	3.16	.81,012	3.96	.64,646	4.76	.53,781	5.56	.46,043
1.57	.163,057	2.37	.108,016	3.17	.80,757	3.97	.64,483	4.77	.53,668	5.57	.45,960
1.58	.162,025	2.38	.107,562	3.18	.80,503	3.98	.64,321	4.78	.53,556	5.58	.45,878
1.59	.161,000	2.39	.107,112	3.19	.80,250	3.99	.64,165	4.79	.53,444	5.59	.45,796
1.60	.160,000	2.40	.106,666	3.20	.80,000	4.00	.64,000	4.80	.53,333	5.60	.45,714
1.61	.159,006	2.41	.106,224	3.21	.79,750	4.01	.63,840	4.81	.53,222	5.61	.45,632
1.62	.158,395	2.42	.105,785	3.22	.79,503	4.02	.63,681	4.82	.53,112	5.62	.45,551
1.63	.157,055	2.43	.105,349	3.23	.79,256	4.03	.63,523	4.83	.53,002	5.63	.45,470
1.64	.156,097	2.44	.104,918	3.24	.79,000	4.04	.63,366	4.84	.52,892	5.64	.45,390
1.65	.155,151	2.45	.104,489	3.25	.78,769	4.05	.63,209	4.85	.52,783	5.65	.45,309
1.66	.153,614	2.46	.104,064	3.26	.78,527	4.06	.63,054	4.86	.52,674	5.66	.45,229
1.67	.153,293	2.47	.103,643	3.27	.78,287	4.07	.62,901	4.87	.52,566	5.67	.45,149
1.68	.152,321	2.48	.103,225	3.28	.78,048	4.08	.62,745	4.88	.52,459	5.68	.45,070
1.69	.151,479	2.49	.102,811	3.29	.77,811	4.09	.62,591	4.89	.52,351	5.69	.44,991
1.70	.150,558	2.50	.102,400	3.30	.77,575	4.10	.62,439	4.90	.52,244	5.70	.44,912
1.71	.149,707	2.51	.101,991	3.31	.77,341	4.11	.62,287	4.91	.52,138	5.71	.44,833
1.72	.148,837	2.52	.101,587	3.32	.77,108	4.12	.62,135	4.92	.52,032	5.72	.44,756
1.73	.147,976	2.53	.101,146	3.33	.76,877	4.13	.61,985	4.93	.51,926	5.73	.44,677
1.74	.147,126	2.54	.100,787	3.34	.76,646	4.14	.61,835	4.94	.51,821	5.74	.44,606
1.75	.146,285	2.55	.100,391	3.35	.76,417	4.15	.61,688	4.95	.51,717	5.75	.44,521
1.76	.145,454	2.56	.100,000	3.36	.76,190	4.16	.61,538	4.96	.51,610	5.76	.44,444
1.77	.144,632	2.57	.99,610	3.37	.75,964	4.17	.61,390	4.97	.51,509	5.77	.44,367
1.78	.143,820	2.58	.99,224	3.38	.75,739	4.18	.61,244	4.98	.51,405	5.78	.44,290
1.79	.143,016	2.59	.98,841	3.39	.75,516	4.19	.61,097	4.99	.51,302	5.79	.44,214
1.80	.142,222	2.60	.98,461	3.40	.75,294	4.20	.60,952	5.00	.51,200	5.80	.44,137
1.81	.141,436	2.61	.98,084	3.41	.75,073	4.21	.60,807	5.01	.51,099	5.81	.44,061
1.82	.140,659	2.62	.97,709	3.42	.74,854	4.22	.60,663	5.02	.50,996	5.82	.43,986
1.83	.139,890	2.63	.97,338	3.43	.74,635	4.23	.60,520	5.03	.50,894	5.83	.43,911
1.84	.139,130	2.64	.96,969	3.44	.74,418	4.24	.60,377	5.04	.50,793	5.84	.43,835
1.85	.138,378	2.65	.96,603	3.45	.74,202	4.25	.60,235	5.05	.50,698	5.85	.43,760
1.86	.137,634	2.66	.96,240	3.46	.73,988	4.26	.60,095	5.06	.50,599	5.86	.43,686
1.87	.136,898	2.67	.95,880	3.47	.73,775	4.27	.59,952	5.07	.50,498	5.87	.43,611
1.88	.136,170	2.68	.95,522	3.48	.73,563	4.28	.59,813	5.08	.50,393	5.88	.43,537
1.89	.135,449	2.69	.95,160	3.49	.73,352	4.29	.59,673	5.09	.50,294	5.89	.43,468
1.90	.134,736	2.70	.94,814	3.50	.73,142	4.30	.59,534	5.10	.50,196	5.90	.43,389
1.91	.134,031	2.71	.94,464	3.51	.72,934	4.31	.59,442	5.11	.50,097	5.91	.43,313
1.92	.133,333	2.72	.94,118	3.52	.72,727	4.32	.59,299	5.12	.50,000	5.92	.43,243
1.93	.132,642	2.73	.93,772	3.53	.72,522	4.33	.59,122	5.13	.49,902	5.93	.43,170
1.94	.131,958	2.74	.93,420	3.54	.72,316	4.34	.58,986	5.14	.49,805	5.94	.43,097
1.95	.131,282	2.75	.93,070	3.55	.72,197	4.35	.58,850	5.15	.49,708	5.95	.43,025
1.96	.130,612	2.76	.92,753	3.56	.71,910	4.36	.58,715	5.16	.49,612	5.96	.42,952
1.97	.129,949	2.77	.92,418	3.57	.71,708	4.37	.58,581	5.17	.49,516	5.97	.42,881
1.98	.129,292	2.78	.92,086	3.58	.71,508	4.38	.58,447	5.18	.49,420	5.98	.42,812
1.99	.128,592	2.79	.91,764	3.59	.71,305	4.39	.58,314	5.19	.49,325	5.99	.42,738

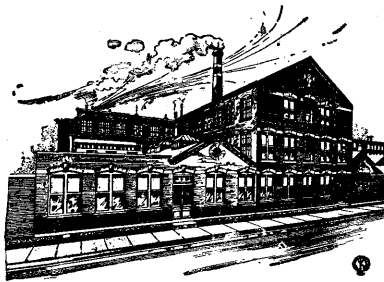
Table prepared by Mr. H. F. Hofer.

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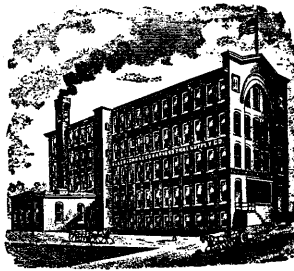
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Value Proportions for Thrown Silk at Various Rates of Boil-off

WRONG calculations in comparing the values of a certain quality of thrown silk at different rates of boil-off are apt to cause unpleasant surprises. For instance, a dealer in thrown silk will offer a buyer 100 pounds boil-off 26 per cent., at say, \$4.70 per pound. Another dealer offers the same buyer the same quality of thrown silk, boiling off 18 per cent., at \$5.21. The buyer in comparing these two prices would naturally be inclined to buy the \$4.70 silk if he is not well posted regarding the question of boil-off. If the last dealer inquires what the boil-off is on the silk offered by the first dealer, the buyer would generally reply that while there is a difference of 8 per cent. in the rate of boil-off, even so the price of the second dealer compares unfavorably with that of the first dealer.

Many people might figure that if 8 per cent. for the difference in boil-off is added to the price of the thrown silk offered by the first dealer, the buyer would still be getting his silk at a less price than that offered by the second dealer; to wit, he would be paying \$4.70 plus 8 per cent., or \$5.07 instead of \$5.21, as offered by the second dealer.

There might be a number of buyers of thrown silk figuring this way, and they would be wrong. A silk boiling off 26 per cent. and selling at \$4.70 per pound is exactly equal to silk boiling off at 18 per cent. and selling at \$5.22 per pound.

The following table of value proportions for thrown silks at various rates of boil-off will be found valuable in making calculations of this kind:—

Comparative Value in Dollars of One Pound of Silk at Various Rates of Boil-off
Reprinted from American Silk Journal, February 1, 1910.

RATES OF BOIL-OFF.												
18%	19%	20%	21%	22%	23%	24%	25%	26%	27%	28%	29%	30%
3.00	2.96	2.93	2.90	2.85	2.81	2.78	2.74	2.71	2.67	2.64	2.60	2.56
3.02½	2.98½	2.95	2.92	2.87	2.83	2.80	2.76	2.73	2.69	2.66	2.62	2.58
3.05	3.01	2.98	2.95	2.90	2.86	2.83	2.79	2.76	2.72	2.69	2.65	2.61
3.07½	3.03½	3.00	2.97	2.92	2.88	2.85	2.81	2.78	2.74	2.71	2.67	2.63
3.10	3.06	3.03	3.00	2.95	2.90	2.88	2.84	2.81	2.77	2.74	2.70	2.66
3.12½	3.08½	3.05	3.02	2.97	2.93	2.90	2.86	2.83	2.79	2.76	2.72	2.68
3.15	3.11	3.08	3.05	3.00	2.95	2.93	2.89	2.86	2.82	2.79	2.75	2.71
3.17½	3.13½	3.10	3.07	3.02	2.98	2.95	2.91	2.88	2.84	2.81	2.77	2.73
3.20	3.16	3.13	3.10	3.05	3.01	2.98	2.94	2.91	2.87	2.84	2.80	2.76
3.22½	3.18½	3.15	3.12	3.07	3.03	3.00	2.96	2.93	2.89	2.86	2.82	2.78
3.25	3.21	3.18	3.15	3.10	3.06	3.03	2.98	2.95	2.91	2.88	2.84	2.80
3.27½	3.23½	3.20	3.17	3.12	3.08	3.04	3.00	2.97	2.93	2.90	2.86	2.82
3.30	3.26	3.23	3.20	3.15	3.11	3.07	3.03	2.99	2.95	2.92	2.88	2.84
3.32½	3.28½	3.25	3.22	3.17	3.13	3.09	3.05	3.01	2.97	2.95	2.91	2.87
3.35	3.31	3.28	3.25	3.20	3.16	3.12	3.08	3.02	3.00	2.96	2.93	2.89
3.37½	3.33½	3.30	3.27	3.22	3.18	3.14	3.10	3.06	3.02	3.00	2.95	2.91
3.40	3.36	3.33	3.30	3.25	3.21	3.17	3.13	3.09	3.04	3.01	2.97	2.93
3.42½	3.38	3.35	3.32	3.27	3.23	3.19	3.15	3.11	3.06	3.02	2.98	2.94
3.45	3.40½	3.38	3.35	3.29	3.25	3.21	3.17	3.13	3.08	3.04	2.99	2.96
3.47½	3.43½	3.40	3.37	3.31	3.27	3.23	3.19	3.15	3.10	3.06	3.01	2.99
3.50	3.45½	3.42	3.39	3.33	3.29	3.25	3.21	3.17	3.12	3.08	3.03	3.01
3.52½	3.48	3.45	3.42	3.36	3.32	3.28	3.23	3.19	3.14	3.10	3.05	3.03
3.55	3.51	3.48	3.45	3.39	3.35	3.31	3.26	3.22	3.17	3.13	3.08	3.05
3.57½	3.52	3.50	3.47	3.41	3.37	3.33	3.28	3.24	3.19	3.15	3.10	3.07
3.60	3.55½	3.52	3.49	3.43	3.39	3.35	3.30	3.25	3.20	3.16	3.13	3.08
3.62½	3.58	3.54	3.51	3.45	3.41	3.37	3.32	3.27	3.22	3.18	3.15	3.10
3.65	3.60½	3.56	3.53	3.47	3.43	3.39	3.34	3.29	3.24	3.20	3.16	3.12
3.67½	3.63	3.58	3.55	3.49	3.45	3.42	3.37	3.32	3.27	3.23	3.18	3.15
3.70	3.65½	3.60	3.57	3.51	3.47	3.44	3.39	3.34	3.29	3.25	3.20	3.17
3.72½	3.68	3.63	3.60	3.54	3.50	3.47	3.42	3.37	3.32	3.28	3.23	3.20
3.75	3.70½	3.66	3.63	3.57	3.53	3.49	3.44	3.39	3.34	3.30	3.25	3.22
3.77½	3.73	3.69	3.66	3.60	3.56	3.51	3.46	3.41	3.36	3.32	3.27	3.24
3.80	3.75½	3.71	3.68	3.62	3.58	3.53	3.48	3.43	3.38	3.34	3.29	3.26
3.82½	3.76	3.73	3.70	3.64	3.60	3.55	3.50	3.45	3.40	3.36	3.31	3.28
3.85	3.80	3.76	3.72	3.66	3.61	3.57	3.52	3.47	3.42	3.38	3.33	3.30
3.87½	3.82½	3.78	3.73	3.68	3.63	3.59	3.54	3.49	3.44	3.40	3.35	3.32
3.90	3.85	3.81	3.75	3.70	3.65	3.61	3.56	3.51	3.46	3.42	3.37	3.34
3.92½	3.87½	3.83	3.77	3.72	3.67	3.63	3.58	3.53	3.48	3.44	3.39	3.36
3.95	3.90	3.86	3.80	3.75	3.70	3.65	3.60	3.55	3.50	3.46	3.41	3.37
3.97½	3.92½	3.88	3.82	3.77	3.72	3.67	3.62	3.57	3.52	3.48	3.43	3.39
4.00	3.95	3.90	3.85	3.80	3.75	3.70	3.65	3.60	3.55	3.50	3.45	3.41

(Over)

Table prepared by Mr. H. F. Hofer.

(Continued)

RATES OF BOIL-OFF.

18%	19%	20%	21%	22%	23%	24%	25%	26%	27%	28%	29%	30%
4.02½	3.97	3.93	3.87	3.82	3.77	3.72	3.67	3.62	3.57	3.52	3.47	3.43
4.05	4.00	3.96	3.90	3.85	3.80	3.75	3.70	3.65	3.60	3.54	3.49	3.45
4.07½	4.02	3.98	3.92	3.87	3.82	3.77	3.72	3.67	3.62	3.56	3.51	3.47
4.10	4.05	4.01	3.95	3.90	3.85	3.80	3.75	3.70	3.65	3.59	3.54	3.50
4.12½	4.07	4.03	3.97	3.92	3.87	3.82	3.77	3.72	3.67	3.61	3.56	3.52
4.15	4.10	4.06	4.00	3.95	3.90	3.85	3.80	3.75	3.70	3.64	3.59	3.55
4.17½	4.12	4.08	4.02	3.97	3.92	3.87	3.82	3.77	3.72	3.67	3.62	3.58
4.20	4.15	4.11	4.05	4.00	3.94	3.90	3.85	3.79	3.74	3.69	3.64	3.60
4.22½	4.17	4.13	4.07	4.02	3.96	3.92	3.87	3.81	3.76	3.72	3.67	3.63
4.25	4.20	4.16	4.10	4.05	4.00	3.94	3.90	3.84	3.79	3.74	3.69	3.65
4.27½	4.22	4.18	4.12	4.07	4.02	3.96	3.92	3.86	3.81	3.76	3.71	3.67
4.30	4.25	4.21	4.15	4.10	4.04	3.99	3.95	3.89	3.83	3.78	3.73	3.69
4.32½	4.27	4.23	4.17	4.12	4.06	4.01	3.97	3.91	3.85	3.80	3.75	3.71
4.35	4.29	4.25	4.20	4.14	4.08	4.03	3.99	3.93	3.87	3.82	3.77	3.73
4.37½	4.31	4.27	4.22	4.16	4.10	4.05	4.01	3.95	3.90	3.85	3.80	3.76
4.40	4.34	4.30	4.25	4.19	4.13	4.07	4.03	3.97	3.92	3.87	3.82	3.78
4.42½	4.36	4.32	4.27	4.21	4.15	4.10	4.05	3.99	3.94	3.90	3.85	3.81
4.45	4.39	4.35	4.30	4.24	4.18	4.12	4.07	4.01	3.97	3.92	3.87	3.83
4.47½	4.41	4.37	4.32	4.26	4.20	4.15	4.10	4.03	3.99	3.95	3.89	3.86
4.50	4.44	4.40	4.35	4.29	4.23	4.17	4.12	4.05	4.00	3.96	3.91	3.88
4.52½	4.46	4.42	4.37	4.31	4.25	4.20	4.15	4.08	4.02	3.98	3.93	3.90
4.55	4.49	4.45	4.40	4.34	4.27	4.23	4.17	4.10	4.04	4.00	3.95	3.92
4.57½	4.51	4.47	4.42	4.36	4.29	4.25	4.20	4.13	4.07	4.02	3.97	3.94
4.60	4.54	4.50	4.45	4.39	4.32	4.27	4.22	4.16	4.10	4.05	4.00	3.96
4.62½	4.56	4.52	4.47	4.41	4.34	4.30	4.25	4.19	4.13	4.07	4.02	3.98
4.65	4.59	4.55	4.50	4.44	4.37	4.32	4.27	4.21	4.15	4.09	4.04	4.00
4.67½	4.61	4.57	4.52	4.46	4.39	4.34	4.29	4.23	4.17	4.11	4.06	4.02
4.70	4.64	4.60	4.55	4.49	4.42	4.37	4.32	4.26	4.20	4.15	4.08	4.04
4.72½	4.66	4.62	4.57	4.51	4.44	4.39	4.34	4.28	4.22	4.15	4.10	4.06
4.75	4.69	4.65	4.59	4.53	4.46	4.41	4.36	4.29	4.23	4.17	4.12	4.07
4.77½	4.71	4.67	4.61	4.55	4.48	4.43	4.38	4.31	4.25	4.19	4.13	4.09
4.80	4.74	4.70	4.63	4.57	4.50	4.45	4.40	4.33	4.27	4.21	4.15	4.10
4.82½	4.77	4.72	4.65	4.59	4.52	4.47	4.42	4.35	4.30	4.24	4.17	4.12
4.85	4.80	4.74	4.68	4.62	4.56	4.50	4.44	4.38	4.33	4.27	4.20	4.15
4.87½	4.82	4.77	4.71	4.65	4.59	4.53	4.47	4.41	4.36	4.30	4.23	4.18
4.90	4.85	4.79	4.73	4.67	4.61	4.55	4.49	4.43	4.38	4.32	4.25	4.20
4.92½	4.87	4.81	4.75	4.69	4.63	4.57	4.51	4.45	4.40	4.34	4.27	4.22
4.95	4.90	4.84	4.78	4.72	4.66	4.60	4.54	4.48	4.43	4.37	4.30	4.25
4.97½	4.92	4.86	4.80	4.74	4.68	4.62	4.56	4.50	4.45	4.39	4.32	4.27
5.00	4.95	4.89	4.83	4.77	4.71	4.65	4.59	4.53	4.48	4.42	4.35	4.30
5.02½	4.97	4.91	4.85	4.79	4.73	4.67	4.61	4.55	4.50	4.44	4.37	4.32
5.05	5.00	4.94	4.88	4.82	4.76	4.70	4.64	4.58	4.52	4.46	4.39	4.34
5.07½	5.02	4.96	4.90	4.84	4.78	4.72	4.66	4.60	4.54	4.48	4.41	4.36
5.10	5.05	4.98	4.92	4.86	4.80	4.74	4.68	4.62	4.56	4.50	4.43	4.38
5.12½	5.07	5.01	4.95	4.89	4.83	4.76	4.71	4.65	4.59	4.53	4.46	4.40
5.15	5.10	5.04	4.98	4.92	4.86	4.80	4.74	4.68	4.62	4.56	4.49	4.43
5.17½	5.11	5.05	5.00	4.94	4.88	4.82	4.76	4.70	4.64	4.58	4.51	4.45
5.20	5.14	5.08	5.04	4.96	4.90	4.84	4.78	4.72	4.66	4.60	4.53	4.47
5.22½	5.16	5.10	5.06	4.98	4.92	4.86	4.80	4.74	4.68	4.62	4.55	4.49
5.25	5.19	5.12	5.08	5.00	4.94	4.88	4.82	4.76	4.70	4.64	4.57	4.51
5.27½	5.21	5.15	5.11	5.02	4.96	4.90	4.84	4.78	4.72	4.66	4.59	4.53
5.30	5.24	5.18	5.13	5.05	4.98	4.92	4.86	4.80	4.74	4.68	4.61	4.55
5.32½	5.26	5.20	5.15	5.07	5.00	4.94	4.88	4.82	4.76	4.70	4.63	4.57
5.35	5.29	5.22	5.18	5.09	5.02	4.96	4.90	4.84	4.78	4.72	4.65	4.59
5.37½	5.31	5.25	5.20	5.12	5.05	4.99	4.92	4.86	4.80	4.74	4.67	4.61
5.40	5.34	5.27	5.23	5.14	5.07	5.01	4.94	4.88	4.82	4.76	4.69	4.63
5.42½	5.37	5.30	5.25	5.17	5.10	5.03	4.96	4.90	4.84	4.78	4.71	4.65
5.45	5.39	5.32	5.27	5.19	5.12	5.05	4.98	4.92	4.86	4.80	4.73	4.67
5.47½	5.41	5.35	5.30	5.21	5.14	5.07	5.00	4.94	4.88	4.82	4.75	4.69
5.50	5.44	5.38	5.33	5.23	5.16	5.09	5.02	4.96	4.90	4.84	4.77	4.71
5.52½	5.47	5.40	5.35	5.26	5.19	5.12	5.05	4.98	4.92	4.86	4.79	4.73
5.55	5.49	5.42	5.38	5.28	5.21	5.14	5.07	5.00	4.94	4.88	4.81	4.75
5.57½	5.52	5.45	5.40	5.31	5.24	5.17	5.10	5.02	4.96	4.90	4.83	4.77
5.60	5.54	5.47	5.42	5.33	5.26	5.19	5.12	5.04	4.98	4.92	4.85	4.79
5.62½	5.56	5.49	5.44	5.35	5.28	5.21	5.14	5.06	5.00	4.94	4.87	4.81
5.65	5.58	5.52	5.46	5.37	5.29	5.22	5.16	5.08	5.02	4.96	4.89	4.83
5.67½	5.61	5.54	5.48	5.39	5.31	5.24	5.18	5.10	5.04	4.98	4.91	4.85
5.70	5.63	5.56	5.51	5.41	5.33	5.26	5.20	5.12	5.06	5.00	4.93	4.87
5.72½	5.66	5.59	5.54	5.44	5.36	5.29	5.23	5.15	5.08	5.02	4.95	4.89
5.75	5.68	5.62	5.56	5.47	5.39	5.32	5.26	5.18	5.10	5.04	4.97	4.91
5.77½	5.71	5.64	5.67	5.49	5.41	5.34	5.28	5.20	5.12	5.06	4.99	4.93
5.80	5.73	5.65	5.69	5.50	5.42	5.35	5.29	5.22	5.14	5.08	5.01	4.95
5.82½	5.75	5.67	5.62	5.52	5.44	5.37	5.31	5.24	5.16	5.10	5.03	4.97
5.85	5.77	5.70	5.64	5.55	5.46	5.40	5.34	5.26	5.18	5.12	5.05	4.99
5.87½	5.80	5.72	5.67	5.57	5.49	5.42	5.36	5.28	5.20	5.14	5.07	5.00
5.90	5.82	5.75	5.70	5.60	5.52	5.45	5.39	5.31	5.23	5.16	5.08	5.02
5.92½	5.85	5.77	5.72	5.63	5.55	5.48	5.42	5.33	5.24	5.18	5.10	5.04
5.95	5.88	5.80	5.75	5.65	5.57	5.50	5.44	5.36	5.27	5.21	5.12	5.07
5.97½	5.90	5.83	5.78	5.68	5.60	5.53	5.47	5.39	5.30	5.24	5.16	5.09
6.00	5.93	5.86	5.79	5.71	5.63	5.56	5.50	5.42	5.34	5.27	5.20	5.12

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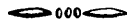
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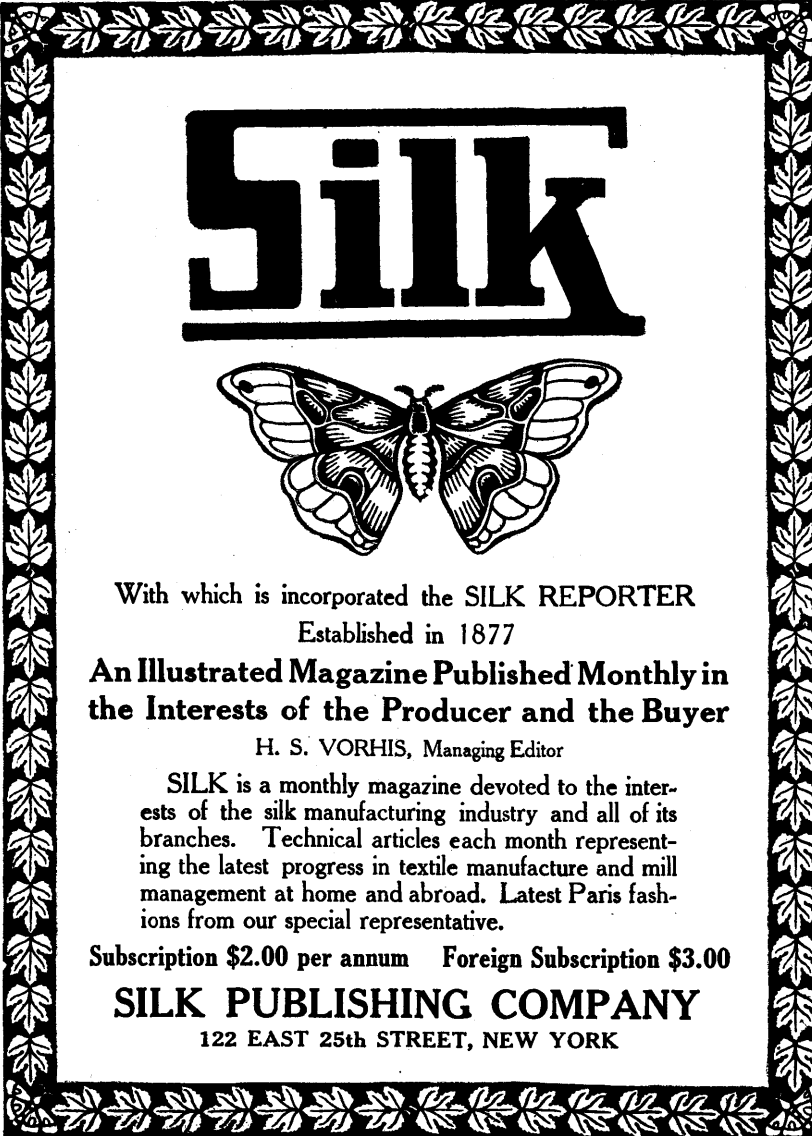
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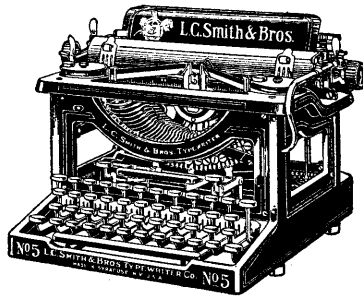
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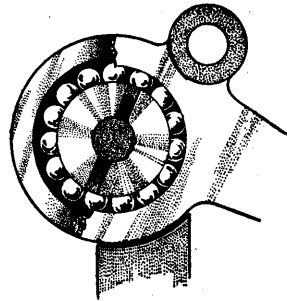
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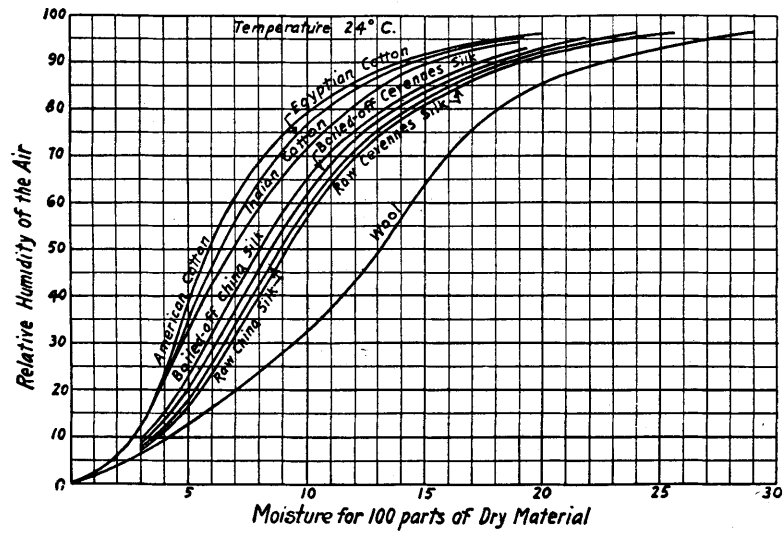
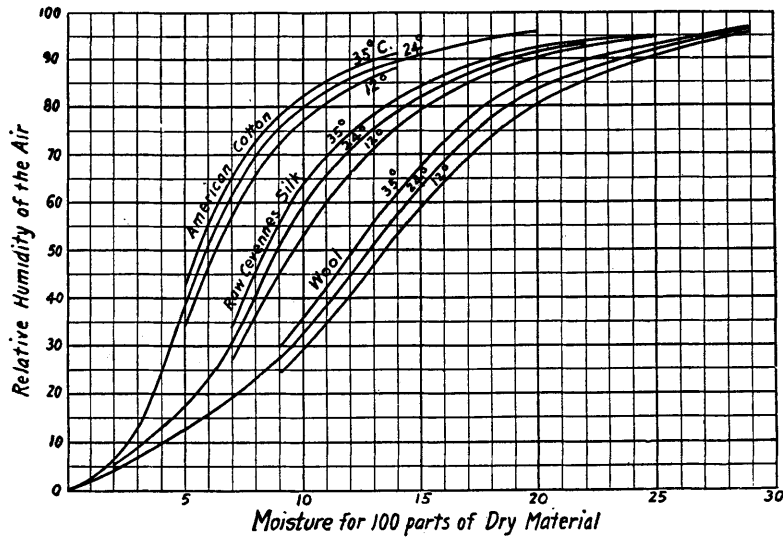
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15	2.93	2.91	2.90	2.87	2.84	2.81	2.79	2.73	2.68	2.63	2.57	2.50	2.40
20	3.63	3.61	3.60	3.58	3.54	3.50	3.45	3.40	3.35	3.30	3.21	3.10	3.00
25	4.30	4.27	4.24	4.20	4.16	4.12	4.06	4.00	3.92	3.85	3.75	3.64	3.50
30	4.89	4.87	4.84	4.80	4.75	4.70	4.65	4.60	4.50	4.40	4.30	4.20	4.06
35	5.42	5.40	5.37	5.32	5.27	5.21	5.15	5.09	4.99	4.89	4.78	4.67	4.56
40	5.95	5.93	5.90	5.83	5.79	5.72	5.65	5.58	5.47	5.37	5.25	5.14	5.05
42	6.15	6.13	6.10	6.03	5.99	5.92	5.85	5.78	5.67	5.57	5.44	5.32	5.21
44	6.35	6.33	6.30	6.23	6.19	6.12	6.04	5.97	5.86	5.76	5.62	5.50	5.37
46	6.55	6.53	6.50	6.43	6.38	6.31	6.24	6.16	6.06	5.96	5.81	5.68	5.54
48	6.75	6.72	6.69	6.63	6.58	6.51	6.43	6.35	6.25	6.15	5.99	5.86	5.70
50	6.95	6.92	6.89	6.83	6.78	6.71	6.63	6.55	6.45	6.35	6.18	6.04	5.86
52	7.18	7.15	7.11	7.05	7.00	6.93	6.84	6.75	6.65	6.54	6.37	6.23	6.05
54	7.41	7.38	7.33	7.27	7.22	7.14	7.06	6.96	6.85	6.73	6.56	6.42	6.24
56	7.65	7.60	7.56	7.49	7.43	7.36	7.27	7.16	7.04	6.92	6.75	6.61	6.42
58	7.88	7.83	7.78	7.71	7.65	7.57	7.48	7.37	7.24	7.11	6.94	6.80	6.61
60	8.11	8.06	8.00	7.93	7.87	7.79	7.69	7.57	7.44	7.30	7.13	6.98	6.80
62	8.34	8.29	8.23	8.16	8.10	8.01	7.91	7.79	7.67	7.53	7.37	7.22	7.05
64	8.57	8.52	8.46	8.39	8.32	8.23	8.13	8.02	7.90	7.76	7.61	7.47	7.30
66	8.79	8.74	8.68	8.62	8.55	8.45	8.35	8.24	8.12	7.98	7.84	7.71	7.55
68	9.02	8.97	8.91	8.85	8.77	8.67	8.57	8.47	8.35	8.21	8.08	7.96	7.80
70	9.25	9.20	9.14	9.08	9.00	8.89	8.79	8.69	8.58	8.44	8.32	8.20	8.05
72	9.54	9.49	9.43	9.36	9.28	9.18	9.08	8.97	8.85	8.72	8.60	8.49	8.36
74	9.83	9.77	9.72	9.65	9.57	9.47	9.37	9.25	9.13	9.00	8.87	8.78	8.67
76	10.12	10.06	10.00	9.93	9.85	9.75	9.65	9.54	9.40	9.27	9.15	9.06	8.98
78	10.41	10.34	10.29	10.22	10.14	10.04	9.94	9.82	9.68	9.55	9.42	9.35	9.29
80	10.70	10.63	10.58	10.50	10.42	10.33	10.23	10.10	9.95	9.83	9.70	9.64	9.60
82	11.04	10.97	10.92	10.84	10.76	10.66	10.55	10.42	10.27	10.16	10.05	10.01	10.05
84	11.38	11.31	11.26	11.18	11.09	10.99	10.88	10.74	10.59	10.48	10.39	10.38	10.50
86	11.71	11.65	11.60	11.52	11.43	11.32	11.20	11.06	10.92	10.81	10.74	10.76	10.95
88	12.05	11.99	11.94	11.86	11.76	11.65	11.53	11.38	11.24	11.13	11.08	11.13	11.40
90	12.39	12.33	12.28	12.20	12.10	11.98	11.85	11.70	11.56	11.46	11.43	11.50	11.85
92	12.75	12.70	12.65	12.58	12.48	12.36	12.24	12.10	11.98	11.90	11.88	12.00	12.38
94	13.12	13.07	13.02	12.95	12.86	12.75	12.63	12.50	12.40	12.34	12.34	12.50	12.91
96	13.48	13.44	13.38	13.33	13.24	13.13	13.02	12.90	12.81	12.77	12.79	13.00	13.44
98	13.85	13.81	13.75	13.70	13.62	13.52	13.41	13.30	13.23	13.21	13.25	13.50	13.97
100	14.21	14.18	14.12	14.08	14.00	13.90	13.80	13.70	13.65	13.65	13.70	14.00	14.50

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**Table of Worsted Regain
For Various Temperatures and Percentages
of Humidity**

DEGREES FAHRENHEIT

% Hmdty.	35	40	45	50	55	60	65	70	75	80	85	90	95	100
15	7.7	7.7	7.6	7.5	7.4	7.2	7.1	6.9	6.8	6.6	6.4	6.2	6.0	5.7
20	9.1	9.1	8.9	8.9	8.7	8.5	8.4	8.2	8.0	7.8	7.5	7.3	7.1	6.9
25	10.4	10.3	10.2	10.0	9.9	9.7	9.5	9.3	9.1	8.9	8.7	8.4	8.1	7.8
30	11.4	11.3	11.2	11.0	10.8	10.7	10.5	10.2	10.0	9.8	9.5	9.2	8.9	8.7
35	12.4	12.2	12.1	11.9	11.7	11.5	11.3	11.1	10.9	10.6	10.3	10.2	9.8	9.5
40	13.3	13.2	13.0	12.8	12.6	12.4	12.2	12.0	11.7	11.5	11.2	10.9	10.7	10.4
42	13.7	13.5	13.4	13.2	13.0	12.8	12.6	12.3	12.1	11.8	11.5	11.3	11.0	10.7
44	14.1	13.9	13.8	13.6	13.4	13.2	12.9	12.7	12.4	12.2	11.9	11.6	11.3	11.1
46	14.5	14.3	14.1	13.9	13.7	13.5	13.3	13.0	12.8	12.5	12.2	11.9	11.7	11.4
48	14.8	14.7	14.5	14.3	14.1	13.9	13.6	13.4	13.1	12.8	12.6	12.3	12.0	11.8
50	15.2	15.1	14.9	14.7	14.5	14.3	14.0	13.8	13.5	13.2	12.9	12.6	12.3	12.1
52	15.6	15.5	15.3	15.1	14.9	14.6	14.4	14.1	13.8	13.5	13.3	13.0	12.7	12.4
54	16.0	15.9	15.7	15.5	15.3	15.0	14.7	14.5	14.2	13.9	13.6	13.3	13.0	12.8
56	16.5	16.3	16.1	15.9	15.6	15.4	15.1	14.8	14.5	14.2	14.0	13.7	13.4	13.1
58	16.9	16.7	16.5	16.3	16.0	15.7	15.5	15.2	14.9	14.6	14.3	14.0	13.7	13.5
60	17.3	17.1	16.9	16.7	16.4	16.1	15.9	15.6	15.2	14.9	14.7	14.4	14.1	13.8
62	17.7	17.5	17.3	17.1	16.8	16.5	16.2	15.9	15.6	15.3	15.1	14.8	14.5	14.2
64	18.1	17.9	17.7	17.5	17.2	16.9	16.6	16.3	16.0	15.7	15.4	15.1	14.8	14.5
66	18.6	18.4	18.1	17.9	17.6	17.3	16.9	16.7	16.3	16.1	15.8	15.5	15.2	14.9
68	19.0	18.8	18.5	18.3	18.0	17.6	17.3	17.0	16.7	16.4	16.1	15.9	15.6	15.2
70	19.4	19.2	18.9	18.7	18.3	18.0	17.7	17.4	17.1	16.8	16.5	16.2	15.9	15.6
72	19.9	19.7	19.4	19.1	18.8	18.4	18.1	17.8	17.5	17.2	16.9	16.6	16.3	16.0
74	20.4	20.1	19.9	19.6	19.2	18.9	18.5	18.2	17.9	17.6	17.3	17.0	16.7	16.5
76	20.8	20.6	20.4	20.0	19.7	19.3	18.9	18.6	18.3	17.9	17.6	17.4	17.1	16.9
78	21.3	21.1	20.9	20.5	20.1	19.7	19.4	19.0	18.7	18.3	18.0	17.8	17.5	17.3
80	21.8	21.5	21.3	20.9	20.6	20.2	19.8	19.4	19.1	18.7	18.4	18.2	17.9	17.7
82	22.3	22.1	21.8	21.4	21.0	20.6	20.2	19.8	19.5	19.1	18.9	18.7	18.5	18.3
84	22.9	22.6	22.4	22.0	21.5	21.1	20.7	20.2	19.9	19.6	19.3	19.2	19.1	18.9
86	23.4	23.2	22.9	22.5	22.0	21.6	21.1	20.7	20.4	20.1	19.8	19.7	19.6	19.5
88	24.0	23.7	23.4	23.0	22.6	22.1	21.7	21.3	20.9	20.6	20.4	20.3	20.2	20.2
90	24.5	24.2	23.9	23.5	23.1	22.7	22.2	21.8	21.4	21.1	20.9	20.9	20.8	20.8
92	25.2	24.9	24.6	24.2	23.7	23.3	22.8	22.4	22.1	21.7	21.6	21.5	21.6	21.5
94	25.9	25.6	25.3	24.9	24.4	23.9	23.4	23.0	22.8	22.4	22.3	22.2	22.3	22.3
96	26.6	26.3	26.0	25.6	25.1	24.6	24.1	23.7	23.5	23.1	23.0	23.0	23.1	23.1
98	27.4	27.1	26.7	26.3	25.9	25.4	24.9	24.5	24.2	24.0	23.8	23.8	23.9	23.8
100	28.2	27.8	27.5	27.1	26.7	26.2	25.8	25.4	25.0	24.8	24.7	24.7	24.6	24.6

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TABLE FOR NUMBERING COTTON YARN AND SPUN
SILK BY WEIGHT IN GRAINS OF 120 YARDS.

Number of Yarn.	120 yards Weight in Grains.	Number of Yarn.	120 yards Weight in Grains.	Number of Yarn.	120 yards Weight in Grains.	Number of Yarn.	120 yards Weight in Grains.
1	1000.00	51	19.61	101	9.90	151	6.62
2	500.00	52	19.23	102	9.80	152	6.58
3	333.33	53	18.87	103	9.71	153	6.54
4	250.00	54	18.52	104	9.62	154	6.49
5	200.00	55	18.18	105	9.52	155	6.45
6	166.67	56	17.86	106	9.43	156	6.41
7	142.86	57	17.55	107	9.35	157	6.37
8	125.00	58	17.24	108	9.26	158	6.33
9	111.11	59	16.95	109	9.17	159	6.29
10	100.00	60	16.67	110	9.09	160	6.25
11	90.91	61	16.39	111	9.01	161	6.21
12	83.33	62	16.13	112	8.93	162	6.17
13	76.92	63	15.87	113	8.85	163	6.13
14	71.43	64	15.62	114	8.77	164	6.10
15	66.67	65	15.38	115	8.70	165	6.06
16	62.50	66	15.15	116	8.62	166	6.02
17	58.82	67	14.93	117	8.55	167	5.99
18	55.56	68	14.71	118	8.47	168	5.95
19	52.63	69	14.49	119	8.40	169	5.92
20	50.00	70	14.29	120	8.33	170	5.88
21	47.62	71	14.08	121	8.26	171	5.85
22	45.45	72	13.89	122	8.20	172	5.81
23	43.48	73	13.70	123	8.13	173	5.78
24	41.67	74	13.51	124	8.06	174	5.75
25	40.00	75	13.33	125	8.00	175	5.71
26	38.46	76	13.16	126	7.94	176	5.68
27	37.04	77	12.99	127	7.87	177	5.65
28	35.71	78	12.82	128	7.81	178	5.62
29	34.48	79	12.66	129	7.75	179	5.59
30	33.33	80	12.50	130	7.69	180	5.56
31	32.26	81	12.35	131	7.63	181	5.52
32	31.25	82	12.20	132	7.58	182	5.49
33	30.30	83	12.05	133	7.52	183	5.46
34	29.41	84	11.90	134	7.46	184	5.43
35	28.57	85	11.76	135	7.41	185	5.41
36	27.78	86	11.63	136	7.35	186	5.38
37	27.03	87	11.49	137	7.30	187	5.35
38	26.32	88	11.36	138	7.25	188	5.32
39	25.64	89	11.24	139	7.19	189	5.29
40	25.00	90	11.11	140	7.14	190	5.26
41	24.39	91	10.99	141	7.09	191	5.24
42	23.81	92	10.87	142	7.04	192	5.21
43	23.26	93	10.75	143	6.99	193	5.18
44	22.73	94	10.64	144	6.94	194	5.15
45	22.22	95	10.53	145	6.90	195	5.13
46	21.74	96	10.42	146	6.85	196	5.10
47	21.28	97	10.31	147	6.80	197	5.08
48	20.83	98	10.20	148	6.76	198	5.05
49	20.41	99	10.10	149	6.71	199	5.03
50	20.00	100	10.00	150	6.67	200	5.00

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PRINCIPLES OF THE VARIOUS YARN COUNTS.

The Denier Scale for Raw-silk.

The standard measure is a skein of 450 metres, weighed with weights of 5 centigrams. The number of these that it takes to balance the weight of the skein is the size or denierage of the silk. In the United States, the denier scale is used for raw-silk only. On the Continent, both raw and thrown silks are figured in deniers. A 1 denier silk (there is none so fine in practice) figures out 4,464,528 yards per lb.; a 14 denier silk is one-fourteenth of this yardage, and so on. Of these 5 centigram weights—called deniers—566.99 make 1 oz avoirdupois. To reduce deniers to drams, divide the deniers by 17.44.

Cotton Yarn Scale.

The hank is 840 yards, and the number of hanks in a pound gives the count. Thus, number 20 will have 20 times 840 yards per pound. In ply yarns, $\frac{2}{20}$ is equal to $\frac{1}{10}$, and $\frac{3}{40}$ would be the same.

English Spun-silk Scale.

This count is the same as the cotton yarn scale, except that the ply yarns are stated differently. In cotton, a $\frac{2}{20}$'s is composed of two ends of $\frac{1}{20}$'s doubled and twisted, equalling a $\frac{1}{10}$. In spun silk, a $\frac{2}{20}$'s is a 2-ply yarn counting 20's in the 2 ply state.

Continental Scale for Spun Yarns (Schappe).

In this, the count represents the number of thousand metres per kilogramme. The length of the metre is 39.370432 inches. The weight of the kilogramme is 2.2046 lbs. In this count, $\frac{1}{100}$ measures 49.619 yards per pound. $\frac{2}{200}$ counts the same as $\frac{1}{100}$.

Linen Yarn Scale.

The hank, or lea, is 300 yards, and the number of hanks in a pound gives the count. A two-ply yarn is half the count of the single. Thus, $\frac{2}{100}$ equals $\frac{1}{50}$, with 15,000 yards to the pound.

Philadelphia Woolen Yarn Scale.

This is the same as the linen scale, except that the size is expressed in "cuts." A 30 cut yarn measures 9,000 yards per pound.

New England Woolen Yarn Scale.

This is based on the "run" of 1,600 yards per pound. A 5 run yarn will be 8,000 yards per pound.

Worsted Yarn Scale.

The hank is 560 yards, and the number of hanks to the pound is the count. A $\frac{1}{40}$ measures 22,400 yards per lb.; a $\frac{2}{40}$ is half that, or 11,200 yards.

The Dram Scale for Thrown Silks.

This is the English net silk scale, and thrown silks are sized by it in the United States. The hank is 1,000 yards, and the number of drams that such a hank weighs is the count of the yarn. There are 256 drams in a pound, so a 1 dram silk, representing one hank of 1,000 yards would run 256,000 yards to the pound. A 1.70 dram would be $256,000 \div 1.70 = 150,588$ yards. To reduce drams to deniers multiply the drams by 17.44.

Artificial silks are sized in deniers.

Mohair and camels' hair yarns take worsted sizings.

Harness twines, and other special hard-twisted yarns, are shortened by their take-up in twist below their nominal counts.

Novelty yarns, tinsels, chenilles, etc., are sold at their stated yardage per pound, whatever it may be.

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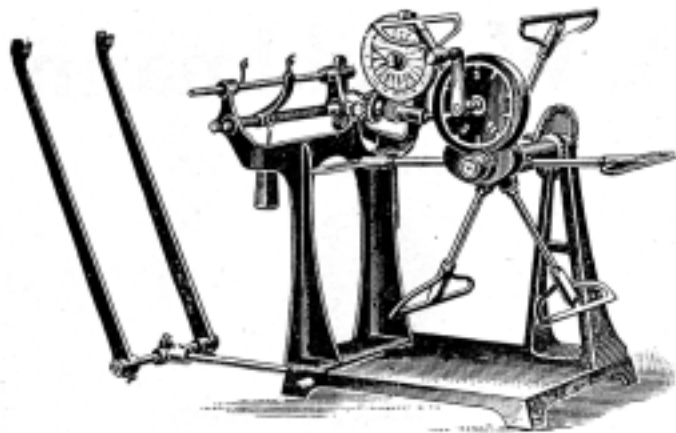
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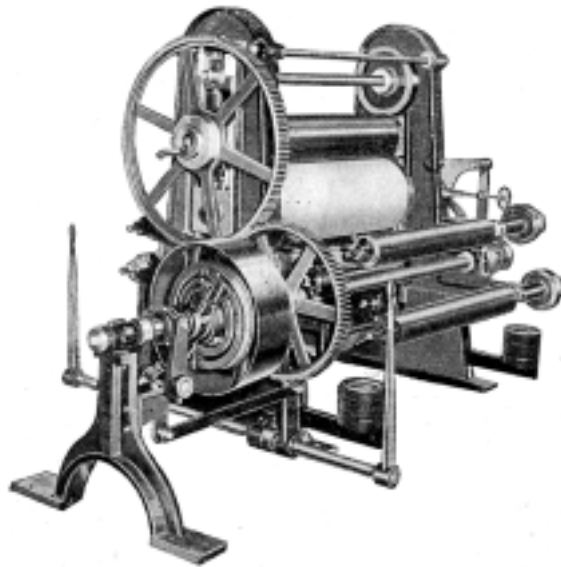
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CUSTOMS PREVAILING IN THE ENGLISH YARN TRADE.

UNDERSTANDING presumed to exist between buyers and sellers of yarn in the absence of any special stipulations:

SIZE OR COUNT. It being impossible to spin and reel cotton or other textile fibres with mathematical accuracy, that is to say to insure that any given size shall contain the precise number of yards or metres the size calls for, it is generally understood that the spinner shall supply the full yardage called for by the size, irrespective of weight, whether he delivers in bundle, warp or otherwise. The limits within which spinners are expected to hold their yarns are $2\frac{1}{2}$ per cent. either way. That is to say, in the case of—say a No. 100—a spinner is considered to have spun with as great accuracy as can be reasonably expected, if the yarn does not average below $97\frac{1}{2}$ or above $102\frac{1}{2}$. If a yarn tendered exceeds these limits in either direction it is usually optional with the buyer to accept the yarn with an allowance for any excess over the $2\frac{1}{2}$ per cent. latitude, or to reject the yarn on account of unreasonable irregularity.

SCALE WEIGHT. This is the weight as registered by an ordinary weighing-scale. As all textile fibres contain a proportion of moisture, which varies according to the humidity of the atmosphere, the scale weight of a perfectly intact bundle will alter from one day to another. Consequently selling by scale weight, although the simplest method, is a fruitful source of discussion between buyer and seller.

CALCULATION WEIGHT. This is the theoretical weight any given number of yards of a size should weigh. Thus, No. 100 Cotton should contain 100 skeins of 840 yards, or 84,000 per 1 lb. Consequently when selling No. 100 by calculation weight, a spinner must charge for 1 lb. for every 84,000 yards he delivers. If the yarn is spun on the coarse side he will have to give rather more than 1 lb. scale weight to make a "calculation lb." and vice-versa. This method of selling is fairer to both parties than scale weight, as it insures the buyer obtaining the full length he requires, while the latitude being limited to $2\frac{1}{2}$ per cent. either way, prevents any possibility of abuse.

CONDITION WEIGHT. This is the most accurate and fair weight, being determined by an impartial establishment termed a Conditioning House. By means of precise and special apparatus, the weight is reduced to that which the yarns, etc., should have when containing the standard amounts of humidity, normal to the various materials which are the following:

Silk, in its normal condition, contains humidity	9.9099%
Wool, " " " " "	15.4334%
Cotton, " " " " "	7.8341%
Linen, " " " " "	10.7143%

N. B.—In general it will be found most satisfactory to refer all discussions as to weight, accuracy of spinning, elasticity, amount of gum in silk, etc., to the Conditioning Works, where the special apparatus put up for these purposes ensures absolute accuracy, such as cannot be obtained by other means.



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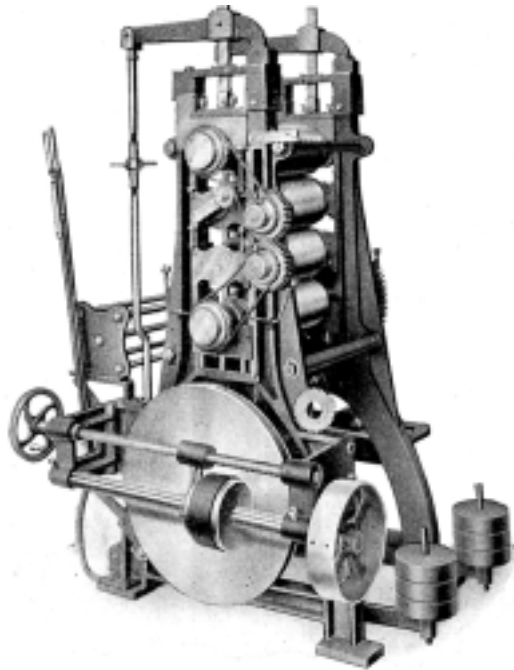
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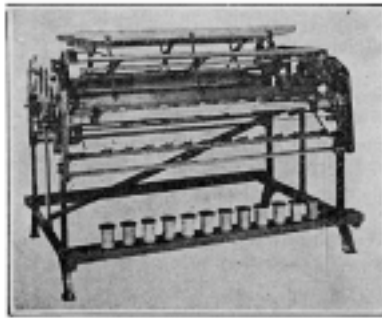
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**HARD AND SOFT SILK WINDERS
JACK AND HIGH SPEED DOUBLERS
SPINNERS AND TWISTERS
ACCURATE POWER REELS
REEL MILLS
STEAM BUNDLING PRESSES**

Write for information—you will be interested

MANCHESTER YARN CONTRACT RULES.

RULE 1.—The actual weight of cop yarn shall be invoiced, including tubes if the yarn be ordered on tubes.

RULE 2.—(a) When warps or backbeams are sold on the basis of scale weight and the counts are coarse, the seller may not invoice in excess of one per cent. over the calculation weight. (b) When sold by calculation weight any deficiency exceeding one per cent. shall be allowed to the buyer.

RULE 3.—For bundle yarns a pressed 10 lb. bundle must contain not less than 9 lbs. 14 oz., and a pressed 5 lb. bundle not less than 4 lbs. 15 oz. of yarn. This rule does not apply to long bundles.

RULE 4.—The number of hanks in a bundle, taking 840 yards to the hank, must indicate the counts of the yarn, "sewings" and "fancy yarns" excepted.

RULE 5. In case of dispute as to counts, length, weight, or condition, the yarn shall be tested by and according to the rules of the Manchester Testing House, and its certificate shall be binding on both parties, who, however, shall have the right to be represented when the samples to be tested are drawn.

RULE 6.—Either buyer or seller has the right to ask the Manchester Testing House to repeat the test, and in that case the average result of the tests shall be taken as final and binding on both parties.

RULE 7.—The seller has a right to replace rejected yarn if he offers to do so within the original time of delivery, and free of all expense to the buyer.

RULE 8.—If "delivery as required" is specified, or if no time is specified, the contract must be completed in six months, and particulars furnished accordingly.

RULE 9.—"Delivery to follow" shall be held to mean at the same rate of delivery as that of the last preceding contract for the same description and quality of yarn.

RULE 10.—If a contract is entered for delivery at specified dates, the cancelment of any portion shall not affect the remainder of the contract, each portion being deemed a separate contract.


RULE 11.—Payment of an overdue account shall be a condition precedent to further delivery. Delivery may be suspended by the seller whenever any payment is in arrear for accepted delivery, or for any delivery respecting which formal notice of rejection or claim has not been given by the buyer.

RULE 12.—In case of a strike, lock-out, break-down, fire, or other unavoidable occurrence, the party affected shall give written notice of his inability to make or accept delivery (as the case may be), and it shall then be at the option of the other side, the aggrieved party, either to agree to the postponement of delivery or within ten days to give notice to close the contract, and to pay or receive the difference in price, such difference to be fixed by the tribunal of arbitration. Contracts for yarn for shipment to foreign countries are excepted from this rule.

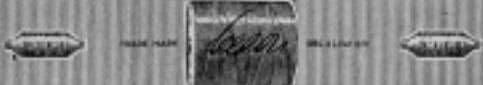
RULE 13.—In default of delivery by the seller at the rate or within the time specified in the contract, of any quantity of yarn bought from him, the buyer may purchase such quantity of similar quality in the open market, charging to the seller the excess, if any, over the contract price which he may have had to pay in making such purchase. If default of acceptance of delivery by the buyer at the rate or within the time specified in the contract of any quantity of yarn sold to him, the seller may dispose of such quantity in the open market, charging to the buyer the deficiency, if any, as between the contract price and the price realized by such sale. In either case three clear days' notice in writing shall be given of the intention either to buy or sell and the quantity of yarn bought or sold shall be deducted from the contract.

RULE 14.—In case of dispute the decision whether a delivery may or may not be rejected, and what damages shall be paid for breach of contract, shall be left to the tribunal of arbitration.

UNIVERSAL WINDING MACHINES
PARTS ALL INTERCHANGEABLE



Proper treatment of
silk necessitates the
fineness of design,
material and work-
manship embodied in
Universal Winding
Machines.



UNIVERSAL WINDING COMPANY
PATENTERS AND SOLE MANUFACTURERS
BOSTON

PRICE LIST OF SINGLE LEATHER BELTING

(Discounts of from, approximately, 45% to 60%
are given, according to quality)

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<hr/> <p style="text-align: center;">CUT LACING.</p> <p style="text-align: center;">Per Bundle of 100 feet</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%; text-align: right;">1</td> <td style="width: 10%;">inch....</td> <td style="width: 10%;">\$1.25</td> </tr> <tr> <td style="text-align: right;">1 1/8</td> <td>.....</td> <td>1.50</td> </tr> <tr> <td style="text-align: right;">1 1/4</td> <td>.....</td> <td>1.75</td> </tr> <tr> <td style="text-align: right;">1 3/8</td> <td>.....</td> <td>2.00</td> </tr> <tr> <td style="text-align: right;">1 1/2</td> <td>.....</td> <td>2.25</td> </tr> <tr> <td style="text-align: right;">1 5/8</td> <td>.....</td> <td>3.00</td> </tr> <tr> <td style="text-align: right;">1 3/4</td> <td>.....</td> <td>3.75</td> </tr> </table>	1	inch....	38 cts	1 1/8	48 cts	1 1/4	60 cts	1 3/8	80 cts	1 1/2	96 cts	1	inch....	8 cts	1 1/8	12 cts	1 1/4	17 cts	1 3/8	22 cts	1 1/2	27 cts	1 5/8	38 cts	1 3/4	48 cts	1 7/8	60 cts	2	80 cts	2 1/4	96 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Try
**Schieren's
 Duxbak
 Spindle
 Belts**

Satisfaction Guaranteed
or money refunded



Chas. Schieren Company
 ESTABLISHED 1868
**Tanners
 Belt Manufacturers**

Cable Address, "SCHIEREN—NEW YORK"

NEW YORK	- - - - -	30-38 Ferry St.
CHICAGO	- - - - -	128 W. Kinzie St.
BOSTON	- - - - -	641-643 Atlantic Ave.
PHILADELPHIA	- - - - -	226 North 3d St.
PITTSBURG	- - - - -	205 Wood St.
DENVER	- - - - -	1752 Arapahoe St.
BROOKLYN, N. Y.	- - - - -	Cor. 13th St. & 3d Ave.
HAMBURG, GERMANY	- - - - -	Auf dem Sande 1
OAK LEATHER TANNERIES	- - - - -	Bristol, Tenn.

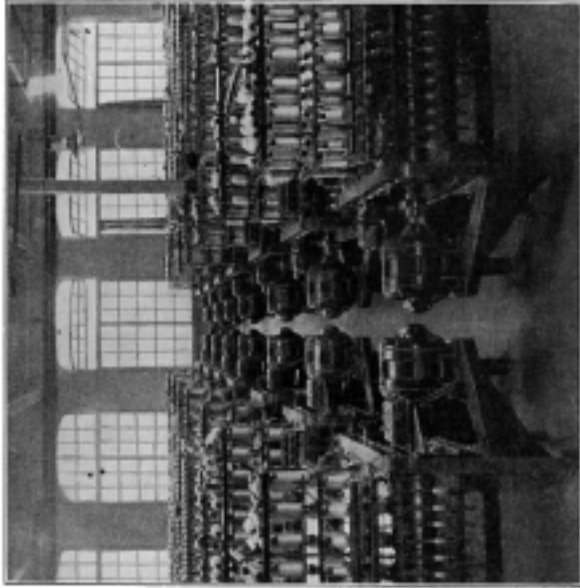
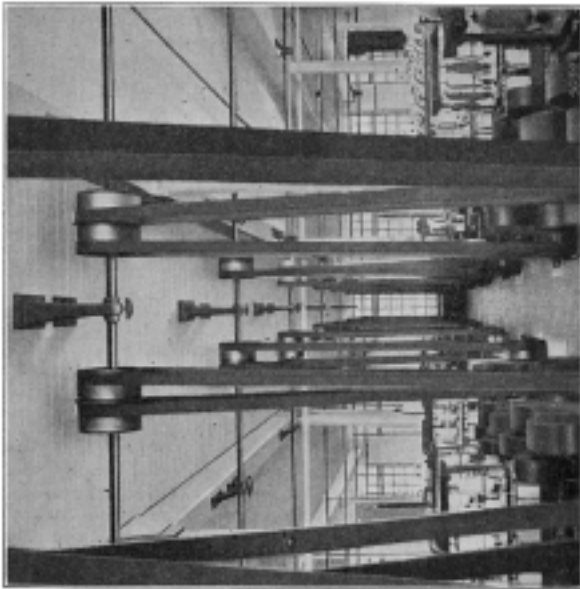
TABLE INDICATING POWER TRANSMISSION OF SINGLE BELTS

FOR DOUBLE BELTS ADD 75 PER CENT.

SPEED OF BELT	400	800	1200	1600	2000	2400	2800	3200	3600	4000	4400	4800	5200	5600	6000
	H. P.	H. P.	H. P.	H. P.	H. P.	H. P.	H. P.	H. P.	H. P.	H. P.	H. P.	H. P.	H. P.	H. P.	H. P.
1-inch	1½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7	7½
2-inch	1½	2	3	4	5	6	7	8	9	10	11	12	13	14	15
3-inch	2	3	4½	6	7½	9	10½	12	13½	15	16½	18	19½	21	22½
4-inch	2½	4	6	8	10	12	14	16	18	20	22	24	26	28	30
5-inch	3	5	7½	10	12½	15	17½	20	22½	25	27½	30	32½	35	37½
6-inch	3½	6	9	12	15	18	21	24	27	30	33	36	39	42	45
8-inch	4	8	12	16	20	24	28	32	36	40	44	48	52	56	60
10-inch	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75
12-inch	6	12	18	24	30	36	42	48	54	60	66	72	78	84	90
14-inch	7	14	21	28	35	42	49	56	63	70	77	84	91	98	105
16-inch	8	16	24	32	40	48	56	64	72	80	88	96	104	112	120
18-inch	9	18	27	36	45	54	63	72	81	90	99	108	117	126	135
20-inch	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150

GIVEN IN FEET PER MINUTE.

This Table is estimated for drives between pulleys of equal and fairly large diameters.



COMPARE THESE TWO PICTURES

On the right is economy of energy, on the left there is waste of energy.

On the right safety, on the left danger of accident.

On the right cleanliness, on the left dirt.

On the right air and light, on the left dust and darkness.

On the right you see an installation of Crocker-Wheeler motors, on the left you see a dust slinging, power consuming, costly conglomeration of belts and shuffling.

Write for our Booklet on C-W Electrical Machinery

CROCKER-WHEELER CO., AMPERE, N. J., U. S. A.

**PRACTICAL RULES FOR DETERMINING SIZE AND SPEED
OF PULLEYS AND GEARS**

To Determine the Diameter of Driving Pulley.

Multiply the diameter of the driven pulley by its number of revolutions per minute, and divide this product by the number of revolutions of the driver.

To Determine the Diameter of Driven Pulley.

Multiply the diameter of the driver pulley by its number of revolutions per minute, and divide this product by the number of revolutions of the driven.

To Determine the Speed of Driving Pulley.

Multiply the diameter of the driven pulley by its number of revolutions per minute, and divide this product by the diameter of the driver.

To Determine the Speed of Driven Pulley.

Multiply the diameter of the driver by its number of revolutions per minute, and divide this product by the diameter of the driven.

To Determine the Size and Speed of Gears.

Substitute the number of teeth in the gear for the diameter of pulley.

GOOD BELTING PRACTICE.

To Find the Length of a Belt.

Add the diameters of the two pulleys together; multiply by $3\frac{1}{8}$; divide the product by two; add to the quotient twice the difference between the centres of the shafts. The product will be the required length.

To Calculate the Power of a Belt.

Multiply its speed in feet per minute by its width, and divide by 1,000 for single and by 700 for double belts. The quotient will be the horsepower.

To Find the Approximate Belt-speed.

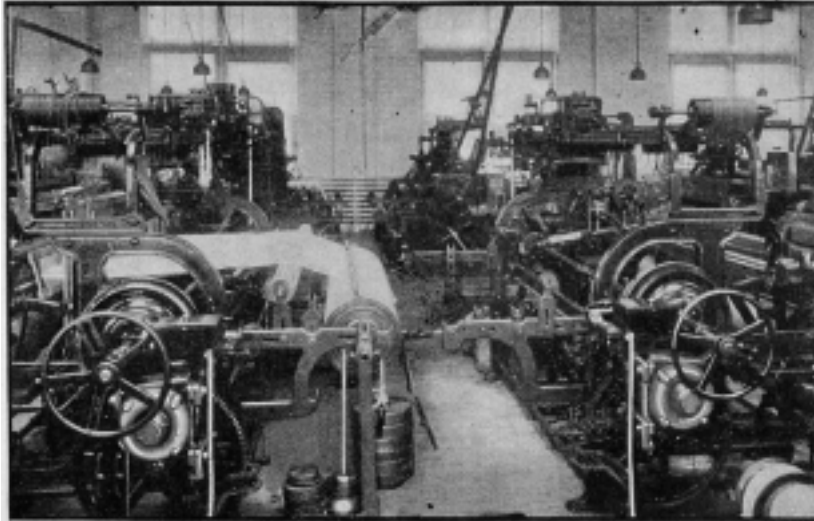
Divide the diameter in inches of one of the pulleys by 4, and multiply the result by the number of revolutions of the pulley per minute. The result will be the approximate belt-speed in feet per minute.

A belt that slips, producing a bright or worn pulley, reduces your output.

A properly designed Belt Tightener for main drives will add 40 per cent. to the life of a belt. This is particularly true if the belt is overloaded.

Use 24-ounce belts on 10-inch diameter, 28-ounce on 14-inch, 30-ounce on 20-inch. As belts increase in width make them thicker—90 per cent. of swaying belts can be cured by increasing their thickness. Make them narrower if you do not need the horse power. Make all quarter or full twist narrow and as heavy as your pulleys will allow.

Belts should be cleaned and greased every six months.



Broad Silk Looms driven by totally enclosed, continuous running type, alternating current motors

Electric Individual Drive Is Economical

The difference in first cost, between individual motor drive and mechanical group drive, is so slight that it is not at all comparable with the advantages secured. The owner of one large mill found that, considering the cost of mill construction in each case, the individual drive for looms costs only \$14.00 per loom more than a modern group drive with overhead shafts.

In replacing an old mechanical group drive, with individual motor drive, the cost will at first appear excessive but the gain, by such a change, in the increase in production together with other advantages among which the following must be considered, will soon convince the up-to-date mill man that the new form of drive has paid for itself in dollars and cents.

A few advantages of individual drive vs. mechanical group drive:—

Uniformity of speed—better “beat up” on looms—less wear and tear on machinery.

Increase in production—higher average speed of driven machinery.

Better quality of product—due to uniformity of speed.

Better light—absence of belts from overhead shafts.

Up-keep low—small repair cost for motors—fewer breakages of machinery.

Cleanliness—no dust, oily lint or oil thrown on goods as in the case of belts and overhead shafting—preferable to operator.

Safety—no belts to catch operators' clothing—no holes in floor, as in the case of underdrive, to increase fire hazard.

Flexibility—offers greater latitude in locating machinery

Economy—More efficient than any group drive on account of the high efficiency of the individual motor—cheaper cost of power for overtime work—minimizes losses due to breakdowns.

The power expert in our nearest office will be glad to study your problems and show you how an electric drive will pay you.

General Electric Company

Largest Electrical Manufacturer in the World

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Mill Power Dept.: Boston, Mass.



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3890

HORSE POWER OF STEEL SHAFTING

FOR LINE SHAFT SERVICE

Shaft Sizes Inches	REVOLUTIONS PER MINUTE										Max. Dist. Between Bearings
	100	125	150	175	200	225	250	300	350	400	
1 1/8	2.4	3.1	3.7	4.3	4.9	5.5	6.1	7.3	8.5	9.7	.....
1 1/4	4.3	5.3	6.4	7.4	8.5	9.5	10.5	12.7	14.8	16.9	6.8"
1 1/2	6.7	8.4	10.1	11.7	13.4	15.1	16.7	20.1	23.4	26.8	7.2"
1 3/4	10.0	12.5	15.0	17.5	20.0	22.5	25.0	30.0	35.0	40.0	8.2"
2 1/8	14.3	17.8	21.4	24.9	28.5	32.1	35.6	42.7	49.8	57.0	8.9"
2 1/4	19.5	24.4	29.3	34.1	39.0	44.1	48.7	58.5	68.2	78.0	9.6"
2 1/2	26.0	32.5	39.0	43.5	52.0	58.5	65.0	78.0	87.0	104.0	10.2"
2 3/4	33.8	42.2	50.6	59.1	67.5	75.9	84.4	101.3	118.2	135.0	10.8"
3 1/8	43.0	53.6	64.4	75.1	85.8	96.6	107.3	128.7	150.3	171.6	11.4"
3 1/4	53.6	67.0	79.4	93.8	107.2	120.1	134.0	158.8	187.6	214.4	12.0"
3 1/2	65.9	82.4	97.9	115.4	121.8	148.3	164.8	195.7	230.7	243.6	12.5"
3 3/4	80.0	100.0	120.0	140.0	160.0	180.0	200.0	240.0	280.0	320.0	.....
4 1/8	113.9	142.4	170.8	199.3	227.8	256.2	284.7	341.7	398.6	455.6	.....
4 1/4	156.3	195.3	234.4	273.4	312.5	351.5	390.6	468.7	546.8	625.0	.....
5 1/8	207.9	260.0	311.9	363.9	415.9	459.9	520.0	623.9	727.9	830.0	.....
6	270.0	337.5	405.0	472.5	540.0	607.5	675.0	810.0	945.0	1080.0	.....
6 1/2	343.3	429.0	514.9	600.7	686.5	772.4	858.0	1029.0	1201.0	1372.0	.....
7	428.8	535.9	643.1	750.3	847.5	964.7	1071.9	1286.0	1500.0	1695.0	.....
8	640.0	800.0	960.0	1120.0	1280.0	1440.0	1600.0	1920.0	2240.0	2560.0	.....

COLD ROLLED STEEL SHAFTING

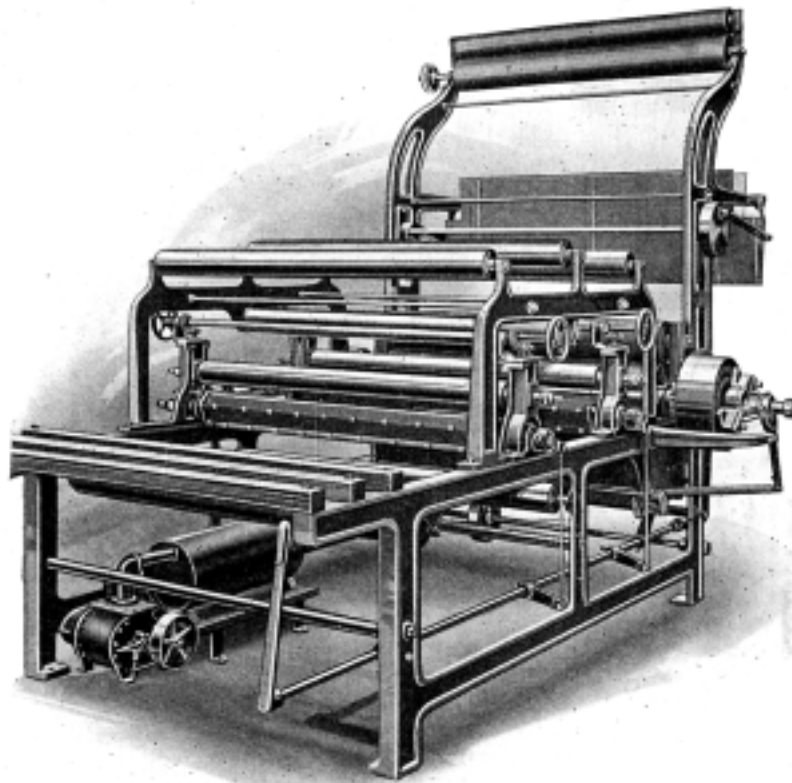
WEIGHTS PER FOOT AND LIST PRICES

Diam-eter	Est. Weight p. ft.	Price per pound	Diam-eter	Est. Weight p. ft.	Price per pound	Diam-eter	Est. Weight p. ft.	Price per pound	
3/16	.095	10c	1 3/8	8.16	5c	3 9/16	29.40	5 1/4c	
1/4	.167		1 13/16	8.78		3 3/8	30.48		
5/16	.259	1 7/8	9.39	3 1/16		31.50			
3/8	.370	7c	1 15/16	10.00		3 1/2	32.64	5 1/2c	
7/16	.510		2	10.65		3 9/16	33.84		
1/2	.666	6c	2 1/16	11.15		3 5/8	35.20		6c
9/16	.843		2 1/8	12.07		3 11/16	36.40		
5/8	1.05	5 1/2c	2 3/16	12.79		3 3/4	37.45	6 1/2c	
1 1/16	1.25		2 1/4	13.49		3 7/8	39.85		
3/4	1.50	5c	2 5/16	14.28		3 15/16	41.40	7c	
1 3/16	1.757		2 3/8	15.07	4	42.50			
7/8	2.03	5 1/4c	2 7/16	15.83	4 9/16	47.40	6c		
1 1/8	2.34		2 1/2	16.68	4 1/4	48.26			
1	2.66	5 1/2c	2 5/8	17.55	4 7/16	52.62	6 1/2c		
1 1/16	3.00		2 5/8	18.32	4 1/2	54.11			
1 1/8	3.36	5c	2 11/16	19.31	4 3/4	60.88	7c		
1 3/16	3.75		2 3/4	20.18	4 15/16	65.50			
1 1/4	4.16	5 1/4c	2 3/4	21.15	5	67.50	7 1/2c		
1 5/16	4.61		2 7/8	22.09	5 1/4	73.58			
1 3/8	5.048	5c	2 15/16	22.96	5 1/16	78.89	8c		
1 7/16	5.50		3	24.06	5 1/2	80.72			
1 1/2	6.00	5 1/4c	3 1/16	25.07	5 3/4	88.24	8c		
1 5/8	6.52		3 1/8	26.09	5 15/16	94.12			
1 5/8	7.04	5 1/4c	3 3/16	27.16	6	96.25			
1 11/16	7.60		3 1/4	28.24					

(Discounts of approximately 50 per cent are allowed from the list prices)

**BLEACHING, DRYING, DYEING AND
FINISHING MACHINERY**

FOR TEXTILE FABRICS



TWO BURNER GAS SINGE (TULPIN STYLE)

H. W. BUTTERWORTH & SONS CO.

PHILADELPHIA, PA.

SPEED OF CUTS FOR MACHINE TOOLS.

Brass: Use high speeds, about the same as for wood.
 Bronze: 6 to 18 ft. per minute, according to alloy used.
 Cast or wrought iron: 20 ft. per minute is a good average for all machines except millers; 30 is about the maximum.
 Machinery steel: 15 ft. on planers, shapers, and slotters; 20 to 45 on turret lathes, according to cut.
 Tool steel: 8 to 10 feet.

Milling Cutters.

Gun metal, 80 ft. per minute; cast iron, 30; wrought iron, 35 to 40; machinery steel, 30. These are good speeds to adopt, with a view to economy, time required for regrinding, etc.

Twist Drills.

The best results are obtained when the rates of speed of twist drills are as given in the following table:

Diam. of drills	Rev. per Min.			Diam. of drills	Rev. per Min.		
	Steel	Iron	Brass		Steel	Iron	Brass
$\frac{1}{16}$	940	1280	1560	$1\frac{1}{16}$	54	75	95
$\frac{1}{8}$	460	660	785	$1\frac{1}{8}$	52	70	90
$\frac{3}{16}$	310	420	540	$1\frac{3}{16}$	49	66	85
$\frac{1}{4}$	230	320	400	$1\frac{1}{4}$	46	62	80
$\frac{5}{16}$	190	260	320	$1\frac{5}{16}$	44	60	75
$\frac{3}{8}$	150	220	260	$1\frac{3}{8}$	42	58	72
$\frac{7}{16}$	130	185	230	$1\frac{7}{16}$	40	56	69
$\frac{1}{2}$	115	160	200	$1\frac{1}{2}$	39	54	66
$\frac{9}{16}$	110	140	180	$1\frac{9}{16}$	37	51	63
$\frac{5}{8}$	95	130	160	$1\frac{5}{8}$	36	49	60
$1\frac{1}{16}$	85	115	145	$1\frac{11}{16}$	34	47	58
$\frac{3}{4}$	75	105	130	$1\frac{3}{4}$	33	45	56
$1\frac{1}{8}$	70	100	120	$1\frac{1}{8}$	32	43	54
$\frac{7}{8}$	65	90	115	$1\frac{7}{8}$	31	41	52
$1\frac{5}{16}$	62	85	110	$1\frac{5}{16}$	30	40	51
1	58	80	100	2	29	39	49

The following are recommended as the best rates of speed for twist drills:

Diameter of drill: $\frac{1}{16}$ to $\frac{1}{4}$ $\frac{3}{8}$ to $\frac{1}{2}$ $\frac{3}{4}$ to $1\frac{1}{2}$

Number of rev. per in.

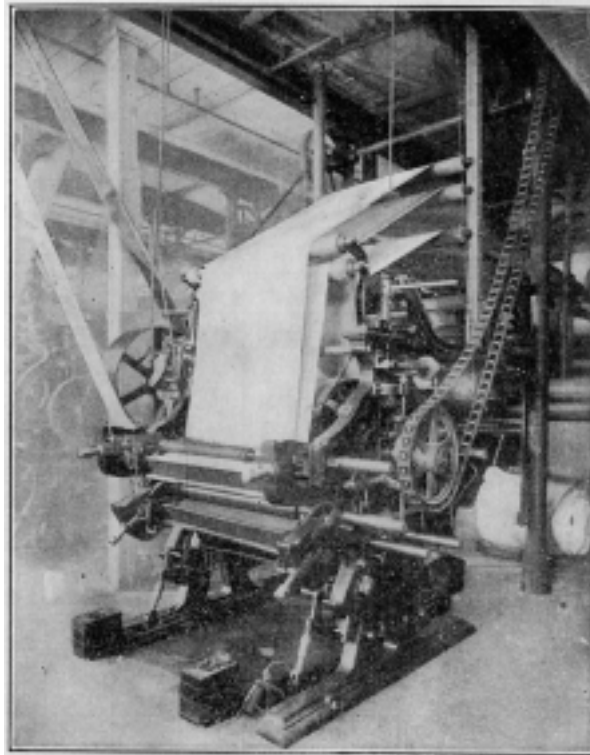
depth of hole: 125 120 to 140 1 in. feed per min.

(From "Mechanics' Pocket Memoranda," Pub. by Int. Cor. Schools, Scranton, Pa.)

NOTE.—Faster speeds than some of those given above have become common since these figures were first published. Speeds for high-speed steel tools are also very much greater.

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(TABLE PUBLISHED BY THE CLEVELAND TWIST DRILL CO.)

THE SPEED OF CARBON STEEL DRILLS

A feed per revolution of .004 to .007 inch for drills $\frac{1}{4}$ inch and smaller, and from .007 to .015 inch for larger is about all that should be required.

This feed is based on a peripheral speed of a drill equal to:

30 feet per minute for steel;
35 feet per minute for iron;
60 feet per minute for brass.

It may also be found advisable to vary the speed somewhat according as the material to be drilled is more or less refractory.

We believe that these speeds should not be exceeded under ordinary circumstances.

TABLE OF CUTTING SPEEDS

Ft. per Minute	15'	20'	25'	30'	35'	40'	45'	50'	60'	70'	80'
DIAMETER	REVOLUTIONS PER MINUTE										
$\frac{1}{16}$ in.	917.	1223.	1528.	1834.	2140.	2445.	2751.	3057.	3668.	4280.	4891.
$\frac{1}{8}$	459.	611.	764.	917.	1070.	1222.	1375.	1528.	1834.	2139.	2445.
$\frac{3}{16}$	306.	408.	509.	611.	713.	815.	917.	1019.	1222.	1426.	1630.
$\frac{1}{4}$	229.	306.	382.	458.	535.	611.	688.	764.	917.	1070.	1222.
$\frac{5}{16}$	183.	245.	306.	367.	428.	489.	550.	611.	733.	856.	978.
$\frac{3}{8}$	153.	204.	255.	306.	357.	408.	458.	509.	611.	713.	815.
$\frac{7}{16}$	131.	175.	218.	262.	306.	349.	393.	437.	524.	611.	699.
$\frac{1}{2}$	115.	153.	191.	229.	268.	306.	344.	382.	459.	535.	611.
$\frac{5}{8}$	91.8	123.	153.	184.	214.	245.	276.	306.	367.	428.	489.
$\frac{3}{4}$	76.3	102.	127.	153.	178.	203.	229.	254.	306.	357.	408.
$\frac{7}{8}$	65.5	87.3	109.	131.	153.	175.	196.	219.	262.	306.	349.
1	57.3	76.4	95.5	115.	134.	153.	172.	191.	229.	267.	306.
$1\frac{1}{8}$	51.0	68.0	85.0	102.	119.	136.	153.	170.	204.	238.	272.
$1\frac{1}{4}$	45.8	61.2	76.3	91.8	107.	123.	137.	153.	183.	214.	245.
$1\frac{3}{8}$	41.7	55.6	69.5	83.3	97.2	111.	125.	139.	167.	195.	222.
$1\frac{1}{2}$	38.2	50.8	63.7	76.3	89.2	102.	115.	127.	153.	178.	204.
$1\frac{5}{8}$	35.0	47.0	58.8	70.5	82.2	93.9	106.	117.	141.	165.	188.
$1\frac{3}{4}$	32.7	43.6	54.5	65.5	76.4	87.3	98.2	109.	131.	153.	175.
$1\frac{7}{8}$	30.6	40.7	50.9	61.1	71.3	81.5	91.9	102.	122.	143.	163.
2	28.7	38.2	47.8	57.3	66.9	76.4	86.0	95.5	115.	134.	153.
$2\frac{1}{4}$	25.4	34.0	42.4	51.0	59.4	68.0	76.2	85.0	102.	119.	136.
$2\frac{1}{2}$	22.9	30.6	38.2	45.8	53.5	61.2	68.8	76.3	91.7	107.	122.
$2\frac{3}{4}$	20.8	27.8	34.7	41.7	48.6	55.6	62.5	69.5	83.4	97.2	111.
3	19.1	25.5	31.8	38.2	44.6	51.0	57.3	63.7	76.4	89.1	102.

"THE BEST IS GOOD ENOUGH"

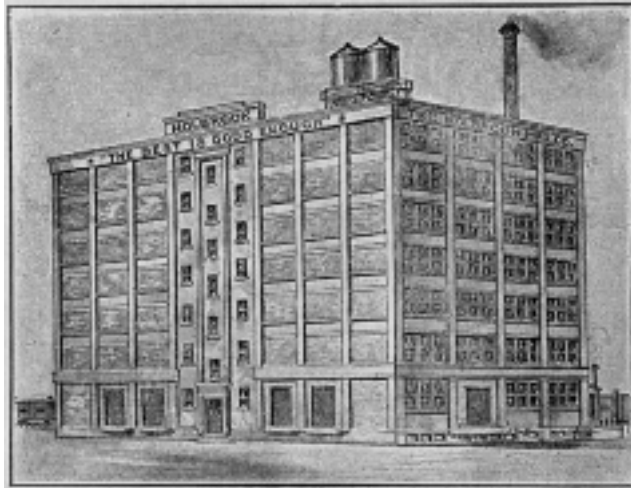
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Philadelphia, Pa.