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The BOBBIN & BEAKER. Organized in November, 1939, by Iota Chapter of Phi Psi Fraternity, and published and distributed without charge four times during the school year by students of the Clemson College School of Industrial Management and Textile Science. All rights reserved.

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This issue of the BOBBIN AND BEAKER is centered around an excellent article on "Warp Preparation—An Art and a Science." This was a speech given by the author, Mr. John C. Bodansky, at the Sixth Annual Seminar at Queens University in Kingston, Ontario. We are grateful to Mr. John C. Bodansky and Mr. John M. Merriman, Editor of the Canadian Textile Journal, for granting permission to the staff to reprint this article.

Also, we urge all of our readers to take special note of Dean Gaston Gage's contribution to this issue. This matter is most urgent to the Textile Industry as a whole. Along the same line is an article by Mr. Ralph J. Bachenheimer. As you read these two contributions, keep in mind a quote by Dean Gage: You can "help yourself by helping us."

The staff and I hope that you will enjoy reading this issue.
In discussing warp precaution as it is today, or may be in the future, it might be helpful to look back into history a short time and see what changes have taken place in both warping and slashing. This might give us a better idea of why we do things the way they are done now.

Some of you must remember the days of spool warping. Yarn was wound from the spinning bobbin to a wooden spool having wooden heads. The machine for this was the spooler. The process was slow and tiresome. It required considerable help (usually women), and the package produced was anything but satisfactory. The spools usually held less than a pound of yarn, and were of uneven lengths and poorly wound. Slub catchers were unknown and little or no attempt was made to control the quality of the yarn on the finished spools.

This process required an enormous number of spools which were tossed around and became battered and damaged. Large bins were required to store both empty and full spools. Every mill had quite a problem keeping track of, and controlling, their inventory of yarn on spools.

The full spools would be stored or taken directly to the warper creel. This creel was known as a ‘V’ creel, or spool creel. Skewers were put through the bore of the spool and it was placed in the steps of the creel. The older spool creels did not have any stop motion, so if an end broke or a spool ran out, a mechanical stop motion was supposed to stop the warper head. Sometimes it did, and sometimes it did not. Later, drop wires were placed on the uprights of the creel near the spools. These drop wires were electrically connected through a lamp bank to a knock-off box on the warper. At the time, it was supposed that the lamp bank would reduce the voltage across the drop wires. Of course it did not as long as the drop wires did not fall, and you could receive a good jolt if you put your fingers across the drop wires.

After the drop wires with lamp bank, the next big step was the use of the transformer which actually did reduce the voltage across the drop wires. The knock off box was still unsatisfactory because the coil in the box was not strong enough to insure releasing the latch every time.

The most modern mills some 30 years ago were running warpers and spool creels at a speed of about 60 yards per minute. Higher speeds were impossible because it was necessary to unroll the yarn from the spools. When the warper stopped, the spools would continue to revolve and dump yarn. Even at 60 yards per minute, it was necessary to equip the warpers with rise rollers to take up the slack.

OVER END WARping

The biggest step forward came with the move to over end warping Creel packages were made the same as they are now; either cones or cheeses. These opened the way to what seemed to be almost unlimited speed, because there was practically no inertia in-
involved, and, as a result, no strain on the yarn when starting, or over-travel of spools when stopping. Warpers could be driven directly by individual motors, starting directly across the line, and stopped suddenly by electric brakes. In the case of the cone creel, transfer tails could be provided and it was not necessary to stop when a package was emptied. Electric stop motions could be used in conjunction with the electric brakes, and the warper would stop in a few yards. Speeds of 300 to 400 yards per minute were the order of the day.

Since the cone creel would be magazined and the cheese creel had larger packages, beam heads grew in diameter from 24 to 28, and finally to 30 inches.

HIGH SPEED WARPER

The advent of the high speed warper did not solve any more mill problems than it created. The users of high speed warping equipment soon learned that yarn quality had to be improved greatly. The yarn of the slow speed days would not run properly on high speed equipment. This meant going all the way back to the cards to improve the quality of the yarn. Many a mill man found out that the cost of his high speed warper was a small part of the expense connected with his changeover. Of course, he also found that all the compensation from high speed warping did not come from the warper room. The necessary improvement in the yarn reflected all through the mill. Better section beam were produced; better slasher operation resulted and higher weaving efficiencies were obtained. On top of all this, the mill produced a better quality cloth.

The first of the high speed warper were all drum or traction driven. That is the drum action against the warp actually drove or rotated the beam. This resulted in slight slippage between the warp and the drum in both starting and stopping. This slippage was more pronounced in stopping since the stopping had to occur more quickly than the starting.

Continuous filament rayon was being run on this same equipment, and it was soon obvious that it was unsatisfactory. The slippage between the warp and drum was damaging the yarn extensively. The situation was serious because it resulted in broken filaments. Broken filaments are a menace to the slasher room and the weave shed, and at the time it seemed that the only solution was to slow the warper down. As a result, speeds on continuous filament yarn dropped to the neighbourhood of 120 yards per minute. This meant more warpers and creels, and, as a result, more floor space. It also meant an increase in personnel.

This condition soon brought about the development of the spindle driven warper for filament. The first of these was equipped with mechanical variable (Continued on next page)
speed transmissions which would keep the yarn speed approximately constant by gradually decreasing the RPM of the beam as the diameter increased. These drives had a limited range and would only take care of speed adjustment necessary for beam build up. No real adjustment in operating speed was available without changing a motor sheave.

VARIABLE SPEED DRIVES

The electrical manufacturers were quick to see that here was a place for a variable speed electrical drive, and the packaged DC drive was given the job. This drive had a much wider range than the mechanical variable speed drive; therefore, changes in yarn speed could be obtained without changing sheaves. This was a great help since it was soon discovered that different yarns operated more efficiently at different speeds.

It was also known that varying mill conditions, such as humidity, will change the speed at which a given yarn will run most efficiently. After all, maximum speed of the warper would not give maximum net production. Maximum net production may come from a high or low speed.

The cotton mills watched the introduction of the spindle driven warper to the filament industry, but since cotton yarn had no filaments to break and was a fuzzy yarn, anyway, it was thought that this warper was for filament only.

As the tendency towards higher and higer speeds developed in the cotton industry, it became apparent that skidding or slippage could be dangerous even on cotton, and soon some cotton mills turned to the spindle driven warper.

SPINDLE DRIVEN WARPER

The increase in warping speeds also brought about another change. Mills noticed, of course, that with increased speed they were doffing more often. As a result, the percentage of down time increased, thus lowering the warping efficiency. The only logical answer was increased beam size. Diameters went from 30 to 32”, and eventually to 40”. Of course, the beams were much heavier and were running faster, so the dangers from skidding or slippage became more apparent, and the need for a spindle driven warper became more obvious. The spindle driven warper now permits a 1000 yards per minute speed on 36 or 40” diameter beams, and the only limit seems to be the amount the mill is willing to invest in warping machinery.

The modern spindle driven high speed warpers are powered by DC drives ranging from 5 to 15 H.P. Many of the tricot warpers employ 5 H.P. drives because the yarn is usually low denier yarns and speeds do not exceed about 500 yards per minute. There are also several 15 H.P. drives in use. These are usually found on machines running heavy denier viscose tire yarn or on carpet yarns where tensions run as high as 125 grams per end.

In order to select the proper drive for a warper, one should know the maximum and minimum speeds required; the number of ends to be operated and the tensions to be encountered. It is important to know the minimum speed and yarn tension because the developed H.P. of a DC drive falls off with the drop from rated or full speed of the motor. As a result, it is sometimes necessary to use a motor larger than would be necessary if the drive were to be operated somewhere near the rated speed at all times. Of course, an intermittent duty crawl or jog speed is always available but this can not be used for continuous duty.

Two types of speed control are favoured for these machines. One type feeds an indication of presser roll RPM to a mechanical differential. An indication of the required operating speed is fed to the other side of the differential by a small DC motor. If both speeds are identical, the output shaft of the differential will not turn, but can be made to position a rheostat which controls the speed of the main motor. This permits speed adjustment, as well as speed control. Speed adjustment is accomplished by using a variable speed input or pilot motor. The other control device consists of an electric tachometer generator driven by the presser roll. This feeds a signal to what might be termed an electrical differential. The other side of the electrical differential is fed by a constant voltage source. A difference in the two voltages can be made to correct the speed of the main drive. Here again we can obtain adjustable speed, as well as accurate constant speed.

As previously noted, beam diameters have been increasing, which, of course, means that the weight of the full beam has greatly increased, and 1400 pound beams are not unusual. Obviously, this has created a

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handling problem and now most spindle driven warpers are equipped with some means to assist in doffing. This is usually an air operated mechanism or an electrically operated mechanism. The purpose of these mechanisms is to lay the full beam on the floor or a dolly, and to pick up the empty without the tender having to break his back cranking them up and down.

Another more recent development on the warper has been the traversing mechanism for the comb. This has been found necessary whenever a low number of ends is involved. The traversing mechanism prevents the build up of ridges and valleys in the warp. In some cases, it is necessary to provide an adjustable traverse. It is even possible to obtain a traverse which is adjustable in both amplitude and frequency.

CHANGES IN CREEL

During the progress toward higher speeds and larger packages, changes took place in the creel. These changes quite naturally involved the package holders for both the cheese and cone creels. Holders had to be designed to permit over-end operation. In the case of the magazine cone creel, the package holders had to permit tying the tail of one package to the start of the other.

Tensions had to be designed to operate with the magazine cone creel. The first of these was the dead weight-washer type. This was, and still is, used on both cotton and continuous filament yarns. The first washer tensions were crude but satisfactory because speeds were not too high. As speed increased, the washer tension was refined. The post was changed from porcelain coated cast iron to hard chrome plated steel. The first washers were plain stampings but later these were ground to a flat surface and hard chrome plated. Today’s washers are precision made and present an extremely flat surface to the yarn. Chrome plated steel posts are still used on cotton, but most of the filament industry has changed to ceramic posts.

Many other type tensions have been tried, but none are so universally used as the washer tension in one form or the other.

The increase in speed of the warper brought ballooning problems to the creel. This problem is especially noticeable on coarse yarn. As a result, balloon breakers had to be devised. These usually take the form of a barrier of some sort stretched between the horizontal rows in the creel. In the cotton creel, this is usually two parallel rows of spinning tape between each horizontal row of cones. In the continuous filament creel, it consists of several rows of stainless steel wire between each horizontal row of cones.

Stop motions have also improved with time, and the newest ones are fast and positive. They may be

(Continued on next page)
either the mercury contact type or the electronic type. In either case, positive action is assured regardless of lint conditions.

DEVELOPMENTS IN SLASHING

The development and advances in slashing have more or less paralleled those in warping. Of course, cotton system slashing is basically the same as it was 20 to 30 years ago, so far as the system itself is concerned, but the machinery for operation of this system has changed.

As we all probably know, cotton system slashing is simply a collection of section beams from the warper in order to pass the complete warp sheet through the sizing medium and through a drier to the loom beam wind up. The drier has been either hot air or cylinder type for a good many years.

The old cotton system slasher consisted of a cast iron beam creel with cast iron bearings, a copper size box with copper bottom quetsch rolls and felt covered cast iron top rolls. The top rolls did not run in bearings and were not equipped with any weighting mechanism.

The drying section consisted of two (2) large diameter copper cylinders, good for about 12 PSI steam pressure. The head had a very simple set of delivery rolls in cast iron bearings, and driven by cone pulleys. The beam drive was by a very unsatisfactory friction. Quite often the cylinders were not driven but were pulled by the yarn. In any case, it was necessary to change gears to change stretch. Quite often it was impossible to change stretch.

The rayon people again influenced the cotton people. The rayon manufacturers went to the cotton system for continuous filament yarns as soon as it was feasible; that is, as soon as the warp lengths were sufficient to warrant cotton system, but the continuous filament people chose the multiple cylinder slasher, consisting of five, seven or nine, and even eleven 23” diameter cylinders. These were later changed to 30” diameter cylinders.

MULTIPLE CYLINDER SLASHER

After several years of operation in this manner, the cotton manufacturers saw the advantages of the multiple cylinder slasher, and they now have changed largely to the multiple cylinder slasher. Off and on during this period there were excursions into the hot air drying systems, and many of these are still in operation.

The change to the multiple cylinder slasher permitted the cotton manufacturers to increase speeds of slashing because these smaller cylinders could be built to operate on higher steam pressures than the large cylinders. This permitted raising the tempera-

tures of the cylinders, thus increasing the speed of the machines.

Since the section beams were becoming larger all the time, the loom beams grew in size, and now practically all slashers will take a 32” diameter flange on the head of the machine. Many of the beam creels now accommodate 40” section beams and speeds have increased from 20 yards per minute to 175 yards per minute.

In the case of the slasher, the limiting factor is not only drying capacity, but the operation of the section beams in the beam creel. At high speeds, these beams, quite naturally, have a tendency to overtravel when the machine is stopped.

Here, again, we have the problem of stopping rather than the problem of starting, and it would appear that both warping and slashing stopping is the biggest problem.

THE BEAM CREEL

Since we realize that package sizes and speeds are increasing, let us examine just what is required of a good slasher and since the yarn enters from the beam creel, let us start there.

The beam creel must be a ball bearing creel for operation at high speed. It must provide a means for the operator to adjust and align the beams properly. (Continued on page 16)
CONES — All types in a variety of sizes, tapers, noses, colors, surfaces, colored tips and bases, printed, treated, perforated; all to customer specification.

TUBES and CORES — For every textile need. Parallel, convoluted or spiral construction. Special treatments for strength, moisture resistance, etc. Made in colors, lacquer ends; with printed, smooth, rough or plain surface. Up to 48" I.D.

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SONOCO Products for Textiles
The total enrollment in the textile curriculums at Clemson is a little more than it was last year—316 to 305 I believe. This slight increase is due to the number of students who changed to textiles after enrolling in other courses and found that these courses were not what they expected.

We were disappointed in the enrollment of entering freshmen. The number of these students was down from last year. During the spring and summer when young men were choosing careers the headline news in the papers indicated poor prospects for textiles. The papers were full of the two price cotton and import problems. Everyone seemed to read these headlines of doom.

What the young men and their parents missed entirely was the good news. Men who have accumulated millions of dollars to invest do not throw it away on a dead industry. During this time when I heard a state senator say the textile industry was a dying industry and the workers would have to be trained in other skills to enable them to make a living, the following was taking place:

1. Stevens was doubling the capacity of Delta finishing and expanding Utica Mohawk to more than 20 acres of floor space.
2. Woodside Mill was starting to build a twelve million dollar plant at Fountain Inn.
3. Springs was planning two plants and building a tremendous cotton warehouse at Fort Lawn.
4. Inman Mills was completing a new plant at Inman.
5. Greenwood was completing two new plants at Ninety Six.
6. The McKissicks were building at Easley.

TWELVE
7. Allied Chemical was building a nylon plant at Irmo.

8. Chemstrand was building and expanding at Greenwood.

9. Everybody was buying new equipment.

This could be expanded but this list makes my point.

One thing that is often overlooked is the production of man made fiber in South Carolina. The value of the man made fiber crop in this state is about five times the value of the cotton crop and about eighty percent of the sale value of all agricultural crops—peaches, cotton, tobacco, lumber and pulp wood, livestock, etc. And this is in the raw state, not woven into a fabric.

We are tremendously proud of the success of our graduates in this great textile industry. A news item last week told of the incorporation of Pacolet Industries, Inc., a group of Milliken mills. Of the seven officers listed in the news item, four—including the president—were our graduates. One other was from N. C. State. Three separate news items two weeks before listed promotions to a division general manager for Stevens, a vice president and general manager for Abney and a plant manager for Woodside. All were Clemson graduates. In a recent series of promotions at Springs I believe they were all our graduates.

I could go on with other examples. Suffice it to say that the manufacturing plants of the textile industry of South Carolina are largely being managed by textile school graduates. And South Carolina has close to forty percent of the spindles in the United States and about half the finishing capacity. Naturally most of them are home state boys from Clemson.

In New York the selling houses are looking for textile school graduates. In the middle west, specialty manufacturers are looking for textile school graduates. We can not turn out these graduates unless we have students entering.

Help yourself by helping us.
Robert W. Ellis is a twenty-one year old Textile Chemistry major from Huntersville, North Carolina. To aid with his college expenses he received a Lowenstein Foundation Scholarship. He has received honors for two semesters of his college career.

While at Clemson, Robert has been an active member of Blue Key, Phi Psi, Arnold Air Society, YMCA Council, Delta Kappa Alpha, AATCC, Student Senate. He edited the Blue Key Directory and is presently serving as Advertising Manager of the Bobbin and Beaker.

For the past two summers Robert has been employed by Thermo Plastics Corporation. After graduation he plans to either enter the Air Force Institute of Technology or attend Graduate school here.

Clyde E. (Gene) Crocker, Jr., a twenty-one year old Enoree, South Carolina, native is a Textile Chemistry major. He has received an Inman-Riverdale scholarship to help finance his expenses at Clemson.

Gene has been kept busy by participating in several campus activities; these include: Phi Psi, Blue Key, YMCA, YAF, AATCC, High Court, Wesley Foundation, Student Senate and International Students Association. He has received honors for two semesters, listed in Who’s Who, served as student body chaplain last year, and is a Distinguished AFROTC cadet.

Gene has gained valuable experience in the textile industry for the past four summers when he was employed by the Riverdale Mills in Enoree. Upon graduation he plans to enter the Air Force for four years.

Twenty-one year old Robert R. Sarratt is a Textile Science major from Gaffney, South Carolina.

Robert has been an active member of AATT and Phi Psi. During his Sophomore year he was a member of the Pershing Rifles. He is presently a member of the Hall Counselors Association, a Distinguished Military Student, and circulation manager of Bobbin and Beaker.

Last summer, Robert gained first-hand experience in the textile industry when he was employed by Pacolet Manufacturing Company in Pacolet Mills, South Carolina.

After graduation Robert plans to attend Graduate School, but at the present time he is still undecided on the institution.

By
Henry M. Poston, T.M. ’65

THE BOBBIN AND BEAKER
American Association for Textile Technology Inc. News

By Spurgeon B. Brian, Secretary, TS '63

Three big events have taken place this fall in the student chapter of American Association for Textile Technology, Inc. They were a big trip, a plaque contest among the pledges, and a joint meeting and supper with the Piedmont Chapter of A.A.T.T.

The field trip, attended by 26 members, was to the Deering Milliken Research Center in Spartanburg and to Saco-Lowell Shops in Easley. We toured the Deering Milliken Research Center during the morning of November 22, 1962. At noon, Deering Milliken treated us to a very nice luncheon. During the afternoon we toured the Saco-Lowell Shops. Everyone was impressed with the safety regulations at Saco-Lowell. We were all required to put on safety glasses before going into the machine shop.

Fifteen pledges entered their plaques in the plaque contest, November 27, 1962. The winner was Henry M. Poston.

The A.A.T.T. banquet and joint meeting with the Piedmont Chapter was held on December 6, 1962, at the Clemson House. Twenty Piedmont members and three students attended. Mr. Gar Gilliam of Gaylord & Lord spoke on how he got ideas for new styles of fabrics. He brought some very beautiful pieces of cloth with him and showed these to us. One interested everyone especially because it was hand woven with metallic gold for extra filling floats.

The luncheon at Deering Milliken Research Center.

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WINTER ISSUE 1963
WARP PREPARATION
(Continued from page 16)

It must have a station from which the operator can control the whole operation of the slasher, and finally, it must have a means for retarding the beam when the slasher is slowed down or stopped. Practically all new beam creels have all of these features; however, the last feature unfortunately consists of a drag rope on most creels. With speeds of 150 yards per minute and above, this is not quite satisfactory, and other methods of retarding the beam are available, but are expensive. It may well be that if slasher speeds continue to increase, this expense can be justified.

THE SIZE BOX

The next element of the slasher is the size box. For many years this has been equipped with two sets of quetsch rolls for spun yarns and one set for filament. The size boxes now have stainless steel pans and fittings; stainless steel bottom rolls, and rubber covered top rolls with no slasher blankets. A good size box section must have a good size level control, as well as a good size temperature control. The heating equipment for cotton should be a three element perforated stainless steel heating pipe. The filament box should have a steam jacket for use on gelatin and low temperature sizes. Since many chemicals, such as Orthocryl are being used, all parts which come in contact with the liquid must be able to resist chemical action. This includes the bearings of the immersion roll, and since no stainless steel ball bearings exist, that will resist these chemicals, nylon bearings are now being used.

The size box is the place to control the quality of the sizing. It is not only necessary to coat the yarn with size, but it is necessary to penetrate to some degree in order to help bond the size to the yarn. On very heavy warps, it is sometimes impossible to get sufficient penetration or coating on all warp ends with one box. In this case, it is necessary to use two boxes and pass half the warp sheet through each box.

The new boxes (both double and single), when equipped with the proper rubber rolls, go a long way towards providing adjustment and control of both pick-up and penetration. Of course, most mills have no way of determining the amount of penetration they are getting except by observing the amount of shedding. Pick-up, of course, can be easily determined by weighing the yarn.

The size box should be equipped with a variable speed drive which will permit speed adjustment and, as a result, tension adjustment between the box and the drying section. Of course, this can only be done on a cylinder type drier. This control can be a motor from a multi-motor drive, or a mechanical variable speed.

The drying section will determine the speed at which the machine will run. Fifty PSI cylinders will permit high temperatures, and faster drying. We know that if we can obtain close to 280 degrees Fahrenheit drying temperature, we can produce about 1600 pounds of dry warp per hour. Here is the determination of slasher speed. On certain heavy warps, this may only mean 80 or 90 yards per minute. On other light sets, such as 80's square, this would mean over 200 yards per minute. From this you can see that in determining slasher production, it is necessary to first find out how fast you are willing to operate and then be guided by this maximum speed.

In all multiple cylinder type slashers, at least the first three cylinders should be teflon coated. Sufficiently large steam entrances to the cylinders should be provided and all cylinders operating at pressures above 15 PSI should have the ASME code mark and certificate of inspection should be furnished.

Temperature controls are quite widely used on spun yarn, although some mills operate with pressure regulation only, and depend on a moisture content controller. All filament slashers should at least have group type automatic recording temperature controls, and individual controls are preferable.

Chain and sprocket drives are the most common for multiple cylinder slashers, although gear drives are available. In either case, the drive should be heavy enough for high speed on light spins or high tensions on heavy continuous filament warps.

In all cases, when spun yarns are run, a hood is a must. It is impossible to get maximum efficiency from the drying section unless the heavy moisture laden air is removed from the cylinder section and size box rapidly.

The cylinder section should also be driven by a variable speed drive in order to permit adjustment of tension between the drying section and the delivery rolls. Again this can be mechanical or electrical.

The head end is simply a means for winding a loom beam and although this sounds simple, it is not. The head is equipped with a three roll set of calender or delivery rolls. These deliver yarn to the loom beam. The loom beam is rotated by some device which will try to make it tend to run faster than the rate of delivery from the calender rolls. The loom beam drive must do this regardless of slasher speed. It must do this at a crawl speed of about 4 yards per minute or an operating speed of well over 100 yards per minute. It must continue to do this while the slasher is ac-
accelerating or decelerating. The old method was the slasher friction. This was a very unsatisfactory operation because the variation in beam diameter caused a variation in slip, and a resultant variation in tension. The multi-motor drive does the job nicely, although controlled friction is available which will also do a very good job.

**CONTROLLED FRICTION**

This controlled friction is actually a small friction placed on the input shaft of a mechanical variable speed transmission. Speed indications are taken from the constant side of the friction and the slip side friction, and fed into a mechanical differential. Any slip above a predetermined amount changes the mechanical variable speed. As a result, the RPM of the beam speed is kept in the proper relation to the diameter of the beam, and the percent slip in the friction is constant. This results in a theoretically constant tension on the warp. Changes in tension can be accomplished by changes of pressure on the friction plates.

The beaming head, of course, should be equipped with a good comb and split rods. Convenient controls should be placed on the head, and all spun yarn slashers should have ironing compressors. The air operated compressors are preferable.

On wide beaming heads for heavy warps, one should be sure that the top calender rolls are heavy enough to withstand the strain imposed by the warp without deflecting.

The new beaming heads permit quick removal of the full warp and quick replacement with an empty beam. This is very important in view of the high speeds at which we now operate.

Since slashers are now operating at much higher speeds, a situation similar to that which developed through high speed warping has been encountered. This is the drop off in efficiency due to more frequent doffing and a greater loss during doffing time. This has been partially overcome by increasing beam size, but still another means is available for increasing slasher efficiency. This is the double beam creel. This consists of two beam creels mounted on tracks. One may be loaded while the other is in operation. As a result of this double beam creel, I have seen slasher efficiencies of 72% when using 30” beams at 125 yards per minute.

**OPTIONAL FEATURES**

In addition to the necessities previously mentioned, there are many optional features which assist in making better warps or improving slasher efficiency.

The moisture content controller permits operating at maximum speed for maximum temperature without the danger of either overdrying or under drying the yarn.

Pneumatic loading of the rubber rolls in the size box makes it simple to apply exactly the right pressure for the required pick up at maximum speed. A control can also be applied to this loading equipment which will help keep correct pick up when the slasher speed is reduced to crawl.

For continuous filament yarn, we now have an oiling or waxing device which can be placed on the head of the machine. Stretch has long been a problem in slashing, and stretch indicators, or determinators, are now available.

For the mill that uses cut marks, a new cut marker is available. This cut marker can be set to mark any cut length from 3” to 140 yards without any change of gears.

Previously, we mentioned multi-motor and controlled friction slasher drives. Although the beam drive in the controlled friction drive is mechanical, the main motor drive is usually a DC motor generator. In applying either of these drives, it is necessary to select the proper H.P. This can be done only if all operating conditions are known. Maximum speed must be known and maximum tension must be known. With this information, the proper H.P. can be calculated, and minimum tension determined. In general, the higher the maximum speed, the higher the allowable minimum. This applies to both types of drive.

**SUMMARY**

I have tried to cover both warping and slashing old style, and new style, but since warp preparation is affected by so many variables; hours, or even days, could be spent on the problems encountered in both processes. Humidity, speed and tension are all tied together in warping. All affect each other. Speed, drying temperature, size viscosity, size formula, size temperature, squeeze roll density and many other factors affect slasher operation, and all of these affect each other.

From all of this, you can see that, although warp preparation seems simple enough, it can become very complicated, and I only hope that I have been able to point out some of the things necessary to good warp preparation.
Wherever man turns fibers into yarn...

Whitin manufactures a complete line of modern, efficient, high-production equipment for the processing of cottons, wools, worsteds, synthetics and blends. Whitin's world-wide reputation for producing the very finest in textile machinery is built upon more than 130 years of experience in the field. Regardless of its preparatory function, each Whitin machine will do its specific job better, faster or more economically than that job has ever been done before. Each will show unmistakable evidence of the advanced research, engineering and craftsmanship which are inherent in all machinery made by Whitin.

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The W. F. Fancourt Memorial Seminar . . .

By
Harold Turner, TM '63

On October 4th and 5th, four Clemson College students and Mr. T. D. Efland, attended the first annual W. F. Fancourt Memorial Seminar in Greensboro, N. C. About 100 college students attended, representing nine colleges from the Carolinas. Attending the Seminar from Clemson were Mr. T. D. Efland, Spurgeon Brian, Frank McGee, Ben Smith, Jr., and Harold Turner.

Walter F. Fancourt, Jr., was the founder and the first president of the W. F. Fancourt Company. Throughout his 50-year tenure as head of the company until his death in 1954, he maintained an eagerness to "keep the business going" by urging that industry adopt a closer kinship with the textile schools and their students who would later provide the technological advances and leadership on which the textile world would grow.

Following his father's interest in young people, and as a tribute to his father and brother, John L. Fancourt, second son of W. F. Fancourt Jr., instituted the first W. F. Fancourt Memorial Seminar. The primary aim of the seminar was to bring industry and education together in an informal atmosphere to discuss the future of textiles, and to give the students a good working knowledge of some of the problems—and the progress—of the industry and may help to decide direction of future careers.

The seminars lasted two days, keeping the students in a trot to meet the busy schedule. Discussions and lectures were given by very prominent men in textiles, such as: C. Norris Rabold, Director of Chemical Research and Development, Erwin Mills, Inc; J. V. Brice, Superintendent of the Renfrew Bleacheries, Division of Abney Mills; John W. Birkhead, Jr., Superintendent, Dyeing Department, Acme-McCrary Corp.; Steven A. Bundy, Head of Quality Control, Research and Development, Burlington Hosiery Co.; George G. Gallico, Vice-President, Chadbourne Gotham Inc.; Roy Reubel, Merchandising Manager, J. P. Stevens Co.; James Gibson, Vice-President of Manufacturing Services, Hanes Hosiery Mills Co.; and Robert J. Froebcr, Executive Vice-President, Hanes Hosiery Mills Co. Their topics were mainly concerned with piece goods and hosiery. A question and answer period followed each lecture.

Highlighting the lectures series was Mr. George G. Gallico, Vice-President Chadbourne Gotham Inc. His topic was "Prelude to Marketing a New Product" which led to runless seamless nylons.

The seminar dinner was held at the Sedgefield Country Club, and was addressed by Gordon Hanes, President, Hanes Hosiery Mills Co., and Archie K. Davis, Chairman of the Board, Wachovia Bank and Trust Company.

The first W. F. Fancourt Memorial Seminar was certainly a success, and it should be an annual affair that every Textile student should desire to attend.
Phi Psi News
by
Robert R. Sarratt, Secretary, T.S. '63

Fourteen new members have been initiated into Iota Chapter of Phi Psi Fraternity this fall. Three of the new members were honorary members and ten of them were regular pledges.

The three honorary members are Mr. James A. Chapman, President of Inman Mills; Mr. Robert M. Jones, Retired Vice President and Director of Research at Saco-Lowell Research and Development Center; and Mr. Joel L. Richardson, a professor in the Textile Management Department and faculty advisor to the student chapter of A. A. T. T. here. They were initiated on the evening of December 3, 1962, and were the guests at a banquet given in their honor at the Clemson House immediately afterwards. Dean Gaston Gage was the guest speaker and gave a very interesting talk on the opportunities for a young man in textiles. Also attending was Mr. C. E. Anderson, First Vice President of the Grand Council, who presided over the initiation ceremony.

On November 23, 1962, the ten new pledges were brought into the Chapter. They are Donald F. Shirley, Douglas V. Rippy, William A. Suttle, Michael R. Prater, Jerry D. Burton, William T. Pack, Donald O. Pope, James E. Burch, Gary A. Hall, Jerry W. Blackwood, and Robert M. Holcombe.

Left to right: William Pack, Donald Pope, Michael Prater, Don Shirley, Bob Holcombe, George Harmon, Gary Hall, Jerry Blackwood, Doug Rippy, William Suttle, and James Burch.

Left to right: George Harmon, Mr. Chapman, Mr. Jones, Mr. Richardson, and Mr. Gentry, chapter advisor.

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Other Power Transmission Items
TEXTILES:
A Future Unlimited

By
Ralph J. Bachenheimer
Iselin-Jefferson Company, Inc.
and
Chairman of the Textile Section of the
New York Board of Trade

Few industries can offer greater challenges or higher awards than those available to capable young men entering the field of textiles. Opportunities are unlimited! Our industry is one of individuals and therefore the road to success is wide open for those who believe in the principle of free enterprise exercised by men dedicating themselves to the career they choose. There is no short cut nor a substitute for ingenuity, initiative and hard work, but for those who are willing to apply themselves thoroughly the proper awards are easy to achieve.

What the textile industry needs is a new generation of young men coming along grasping its opportunities at the widest possible scope. Few industries as large and as basic as ours have consistently shown returns on an investment as poor as the textile industry. Textiles today are selling at levels below those of ten years ago, while the rest of our economy has undergone a continued period of inflationary price increases. We need new management which has enough vision to realize that it takes more than cutting a price, or to underbid a competitor, to return stability and profitability to textiles. What we need, and need badly and quickly, is a new approach whereby we stop apologizing for our products but go out and promote forcibly the many new fabrics produced in our mills. New fibers and chemical finishes given fabrics, properties unheard of just a few years ago, and yet none of these have helped to increase the profitability of this industry of ours to a point where it can compare with other major producers in this country. Bold and imaginative selling, coupled with a willingness to attract a larger share of the consumer dollar from other industries can easily change the mistakes of the past and today.

Promotion, selling and merchandising have undergone vast changes during the past twenty years. These changes have benefited our economy at large. We hope that all of you who are spending years in college training to acquaint yourselves with these changes will learn how to apply them in your life work after graduation and help lead this industry, which is the life blood of the South, to a brighter and more glorious future.

J. E. SIRRING COMPANY

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Special TEXTILE DICTIONARY for BEST RESULTS in Textile Processing

C
Corobex (Kör·'n·bex)
A durable anti-bacterial additive for textiles. Provides fixed, lasting protection against germs, mildew, perspiration odors and other odors of bacterial origin. Easily applied during dyeing or finishing operations. Will cause no shade change in dyed and printed colors, no yellowing of whites. Does not affect the hand of the finished goods. Compatible with most types of finishing materials.

D
Discolite (di·sō·li·tt)
Concentrated sodium sulphoxyacetate formaldehyde available in liquid, pea, rice or powder form. A powerful reducing agent, stable at high temperatures. Widely used to effect reduction and solution of vat colors, and for discharge effects when applied to colored grounds. Effective when mixed with vat colors and discharge pastes wherever the reducing agent must retain its reducing power after being dried into the fabric.

Dispersall (di·sé·pur·səl)
A long chain ethylene oxide condensate in the form of a colorless, neutral, somewhat viscous liquid. Fully resistant to hard water, and miscible with water in all proportions. A retardant and leveling assistant in vat dyeing. Used widely as a dispersing agent in dyeing synthetic fibers with disperse colors and for fast color salts and bases in Naathol dyeing and printing. Effective in stripping to prevent redeposition of the color on stripped goods.

N
Neofinish (Ne·ó·fín·sh)
Non-ionic softener dispersible in hot water, suitable for all textile fibers, both natural and synthetic. Compatible with all types of finishing materials, including resin finishes. No development of color or odor in goods finished with Neofinish, even in storage. No yellowing at time of application.

Neowet (nō·wē·t)
Complex Polyethylene Ether in the form of a pale yellow, slightly viscous liquid. A non-ionic surface active wetting agent, effective at all temperatures. Completely compatible with enzymatic desizing agents and readily soluble in water. Contains 30 1/2% active ingredients. Widely used in scouring all types of textile fabrics and for general wetting purposes.

Neowet X (nō·wē·t)

Neozymes (nō·zī·zmas)
Desizing agents made up of amylolytic, proteolytic and fat splitting enzymes available in the form of crystalline powder or liquid concentrate for high or low temperature requirements. Neozymes quickly remove all trace of starch glue or gelatin staining without danger of damage to even the most delicate fabrics. For best results, use with NEOWET to speed saturation.

P
Parolite (pə·rō·lit)
Zinc sulphoxyacetate formalddehyde in the form of white crystalline powder. A highly concentrated stripping agent for all forms of wool and modern synthetics.

Vatroli
t (və·trō·lit)
Concentrated sodium hydrosulphite in the form of white crystalline powder. A powerful reducing agent for vat colors, ideal for dry finishing because of its free flowing, dustless character. Completely soluble in water. Effective stripping agent for direct, sulphur and vat colors on cellulose fabrics. Quickly removes rust stains from cotton goods. May be stored indefinitely. Available with optical whites and in buffered formulas for high temperature use without excessive alkalinity.

Velco Softener (ve·lō·t)
A highly sulphomelated tallow in the form of a creamy white paste, easily dispersed in water. Used in general finishing of all types of textile fabrics. Will not "smoke off" or change color in high temperature operations such as calendering or drying. Has no effect on light fastness of colors.

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Harness Accessories • Automatic and Hand
Threaded Southern Shuttles (Tempered Dog-
wood, Persimmon and Fibre Covered) •
Warp Preparation Equipment • Electrode
Rods (Fibre and Plastic Insulation) • Drop
Wires • Creel Stop Motions • Pigtail Thread
Guides • Tension Washers • Light Metal
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