Please note that this is the last issue of the BOBBIN AND BEAKER. It is being discontinued.
Special TEXTILE DICTIONARY for BEST RESULTS in Textile Processing

Coroehex (Ker's-beh) A durable anti-bacterial additive for textiles. Provides fixed, lasting protection against germ, mold, perspiration, dust, 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.

Discollite (dis-ko-lit) Concentrated sodium sulphate formaldehyde available in lump, 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 return its reducing power after being dried into the fabric.

Dispersail (dip-sair) 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 Naphthol dyeing and printing. Effective in stripping to prevent redeposition of the color on stripped goods.

Neowet (n-ewet) 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 design agents and readily soluble in water. Contains 10% active ingredients. Widely used in scouring all types of textile fabrics and for general wetting purposes.


Neozymes (ne-o-zims) Denaturing 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 sizing without danger of damage to even the most delicate fabrics. For best results, use with NEOWET to speed saturation.

Parolite (par-o-lit) Zinc sulphate formaldehyde in the form of white crystalline powder. A highly concentrated stripping agent for all forms of wool and modern synthetics.


Velso Softener (vel-s) A highly sulphonated 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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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 University School of Industrial Management and Textile Science. All rights reserved.

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THE BOBBIN & BEAKER is a non-profit magazine organized to serve Clemson students and the textile industry. We ask our readers to consider favorably our advertisers when buying.
This is the last issue of the Bobbin and Beaker. There have been many who have made this publication possible: the advisors, advertisers, and others. We give all our sincere thanks.

A special thanks, however, must go to Mrs. Dorothy Houx, Sirrine Librarian, whose behind the scenes help has been most invaluable.

In the last issue is an article by H. W. Close and also articles of two retiring members of the textile faculty.

Again we would like to thank our loyal advertisers and hope that all readers will look upon them favorably.

On behalf of the Bobbin and Beaker staff, I wish you all success and happiness in any endeavors you might undertake.

—S. E. G.

Wes Connolly

Bruce Edwards
SONOCO leadership meets the challenge.

... economical, reusable plastic yarn carriers!

In its continuing quest for better and more economical yarn carriers, Sonoco has paced the industry in the development of plastic bobbins and cones.

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The exhaustive research devoted to plastic carriers is typical of that which is part of every Sonoco product. For Sonoco customers it means economy and dependable performance. Don't settle for less!
The Queen's Shrinking Domain

A serious lack of price stability and the refinement of alternate fibers apparently combined last year to put a tighter squeeze on the shrinking domain of silk, queen of the textile industry's family.

Raw silk is available in commercial quantities from overseas only, and unsettled economic conditions during most of 1965 in the principal Far Eastern silk-producing nations had world-wide repercussions. Sharp price fluctuations throughout the year undermined both consumer and manufacturer confidence in raw silk because of the strong relationship between the textile industry's raw material costs and finished product prices.

One of the effects of the world silk situation is depicted by the 1965 record of raw silk's movement into the textile mainstream. Deliveries to silk textile production plants in the United States dropped to 33,190 bales last year from the 1964 level of 36,547. Imports of raw silk took an even sharper tumble, from a 1964 total of 37,103 bales to only 30,458 bales in 1965.

By contrast, the United States imported 611,302 bales of raw silk in 1929. The price of it reached an average of $4.93 a pound and there wasn't enough to go around when orders for the year were added up. Nor were there any other fibers available to do the jobs silk could do.

In the years since that zenith of activity, silk has lost its position as a basic textile fiber and has its relative position in the total fibers market dwindle to insignificance, although it is still considered one of the most luxurious fibers in the world. It shrugged off the advent of rayon (called "artificial silk" by its early promoters) and acetate early in the 20th Century, but the combination of economic depression and stepped-up fiber research was too much for silk.

The big breakdown came during the depression of the 1930's. Ten years after 1929's record highs, the price of raw silk had dropped to $1.69 per pound and the market had more than enough to meet requests. Of greater significance, nylon had been introduced in 1938 and was rapidly mopping up many of silk's primary markets, especially women's hosiery.

The advent of World War II thwarted silk's immediate comeback hopes, and the aftermath of the war smoothed the way for nylon and other fibers to monopolize almost all of silk's traditional markets. Restoration of war-torn silk production facilities provided the industry with a new supply base of raw silk but the desperate struggle of the past 15 years to restore silk to its once prominent position has resulted largely in an unstable raw silk market rather than in notably expanded consumer product markets.

Still, silk has managed to hold on and many manufacturers believe the long-term outlook is much more encouraging than the immediate situation would seem to suggest. Silk's reputation, they point out, is centuries old and based on an ageless elegance, incomparable beauty and an exotic atmosphere no other fiber can match.
Professor McKenna Retires

By Ronald Wayne Rogers, T.M. '67

After forty-one years of faithful service to students and to our school, Professor A. E. McKenna has announced that he will retire at the end of this academic year. Clemson University will lose the services of a man who has dedicated much of his life to preparing young men to enter the textile industry.

A. E. McKenna was born on July 10, 1901 in Barrington, Rhode Island and later graduated from Barrington High School. He graduated from Rhode Island School of Design in 1922 and received his B.S. degree from Clemson in 1930 in Textile Engineering. In 1933 he received his M.S. degree from the University of Tennessee in Industrial Education. He was employed by Mount Hope Spinning Company and Warren Manufacturing Company, both located in Warren, Rhode Island.

In September of 1925, Professor McKenna came to Clemson in the Weaving and Designing Department. He became Associate Professor Weaving and Designing in September, 1927 and Professor of Weaving and Designing in June, 1943. On September 1, 1964, he became Senior Professor of Textiles, the position which he now holds.

Professor McKenna is a member of the Presbyterian Church, Phi Psi National Honorary Textile Fraternity, and the American Association of Textile Technology, Piedmont Chapter. He is also a member of the Living Arch Chapter No. 21, RAM Clemson Lodge 254, A.F.M., Society of Mayflower Descendants, and Iota Lambda Sigma. He is a director in the Oconee County Tuberculosis Association.

In 1931 Mr. McKenna married the former Ruth Wills. They have one daughter, Mrs. C. F. Parshall who lives in Kingsport, Tennessee. Mr. and Mrs. McKenna are very proud of their three grandchildren.

Mr. McKenna has written numerous magazine articles on cam, dobbey, and Jacquard looms and leno weaving. He wrote the I.C.S. Leno Weaving book which is currently being used as a text book in WD 301 here at Clemson University.

We cannot go into all of Professor McKenna's achievements. We can only thank him for his dedication and service and wish him luck for the future, which he plans to spend much of at Edisto Beach. The Bobbin and Beaker Staff and the faculty and students of the School of Industrial Management and Textile Science salutes Professor A. E. McKenna.

WINTER-SPRING ISSUE 1966
Textile Automation--And People

An Address by H. W. Close
President, the Springs Cotton Mills

I. INTRODUCTION

Throughout history, few trends have generated more discussion, more fears and more difference of opinion than the matter of automation.

Automation is nearly as old as Man. And, like Man, it is just now bursting into the Space Age. But Man still wonders about it.

When Man invented the wheel, Fred Flintstone probably warned, “It’ll never sell.”

Thousands of years later, when Man hooked an engine to a set of wheels, critics viewed the Horseless Carriage with disapproval and kept on making horse collars.

But automation has continued to progress over the centuries — and with it people have progressed. Machines and automated processes have freed Man from drudgery, long hours, wasted motion, and the limitations of bone and muscle.

And despite dire predictions that automation would make humans obsolete, the critical search in industry today is not for capable machines, which we can buy — but for capable people. Despite the recurrent warning that automation will destroy jobs and create unemployment, we are faced today, in many areas of the nation, with a shortage of trained, or trainable people.

Oh, there are plenty of bodies — but bodies won’t do. Today, industry needs, and must have, people with educational backgrounds and aptitudes that will enable them to use modern tools and machines and processes.

If you don’t think that Man has progressed, along with automation, just listen to this list of office rules that was posted by one employer less than 100 years ago:

“Employees will daily sweep floors, dust furniture and shelves.

“Each day fill lamps, clean chimneys, and trim the wicks; wash the windows once a week.

“Bring a bucket of water and a scuttle of coal for the day’s business.

“Make your pens carefully; you may whittle nibs to your individual taste.

“The office will open daily at 7:00 a.m. and close at 8:00 p.m. daily, except on the Sabbath, on which day it will remain closed.

“Men employees will be given an evening off each week for courting purposes, or two evenings a week if they go regularly to church.

“Any employee who smokes Spanish cigars, uses liquor in any form, gets shaved in a barber shop, or frequents poolrooms, will give me good reason to suspect his worth, intentions, integrity and honesty.

“The employee who has performed his labors faithfully and without fault for a period of five years, and who has been thrifty and attentive to religious duties, will be given an increase of five per day, provided a just return in profits of the business permits it.”

Well, I don’t know how many of you are smoking Spanish cigars, but I’m pretty sure that no one is trimming the wicks and whittling nibs on coffee breaks these days. And those big things that secretaries lug to work are pocketbooks—not coal scuttles.

Automation, and people, are moving ahead without any question — and this is happening in the textile industry today at a pace that is difficult to grasp.

At least 10 new textile plants are planned for the United States and Canada alone during the first six months of 1966. More than two dozen new textile plants have been announced, or have gone into production, in the last 18 months. Textile machinery makers have order backlogs ranging from a year to a year and a half.

The U. S. textile industry is expected to spend more than $1 billion during 1965 for new plants, modernizations, and new equipment. That compares with $228 million just seven seven years ago. Last year, the figure was $760 million.

With this trend to modernization and automation, the number of jobs in the textile industry has increased, instead of shrinking. Today, the industry employs more than 925,000 people — compared with 895,000 people in 1963.

And these people are working in a textile industry that is more efficient, more flexible, more streamlined, more responsive to consumer needs—and more profitable — than ever before. With such changes have come greater job security, better working conditions and higher wages for textile employees.

(Continued on page 10)
A Symbol of Satisfaction

THIS TRIANGLE, a mark of distinction, guarantees dyed and bleached yarns with superior knitting and weaving qualities. Wherever you see THIS TRIANGLE, you can be sure that quality fabrics are being produced.

Substantial investments in modernization and expansion projects in recent years have resulted in increased sales of yarns produced at this plant.

The continued growth of Piedmont is ample proof that modernization is imperative in today's competitive markets.
II. OLD AND NEW — IN PICTURES

Let's look at some "BEFORE" and "AFTER" pictures — just to get an idea of some of the changes that have been taking place in the textile industry.

1. Old plant—and—New plant.
2. Old "cotton warehouse"—and—New cotton warehouses.
3. Old "power plant"—and—New power plant.
4. Old loom—and—New shuttleless loom.
5. Old materials handling—and—New materials handling.
6. Old paper handling—and—New paper handling.

III. DEFINITION

The toughest problem in discussing textile automation is to agree on a definition of the word. It seems to mean different things to different people. Someone has said it's as hard for a businessman to define automation as it is for a preacher to define sin.

I won't go into a definition of sin. That seems to mean different things to different people, too. And instead of trying to define textile automation, I'm going to divide it into four general categories and cover each one lightly. These categories are:

— Mechanical automation
— Materials handling automation
— Process automation
— And plant automation

Let's take them one at a time:

(1) MECHANICAL AUTOMATION is the use of machines to do things formerly done by hand. The textile industry got into this business with power-driven machinery almost 200 years ago. Gradually, it developed a number of machines to process cotton and other fibers.

But for well over a century after this, mechanical automation remained painfully static. There were improvements, but they weren't earth-shattering. Even machine speeds increased surprisingly little.

In the 100 years from 1850 to 1950, for example, spinning spindles increased in speed from 6,000 revolutions per minute to less than 10,000 revolutions per minute. That's pretty slow progress.

A real break-through in machine speeds and efficiency came a few years after World War Two. And in the years since 1948 we HAVE seen great changes.

In those 17 years, the speeds of drawing frames and cards multiplied five times and the speeds of roving frames, winders, quillers and slashers at least doubled. In fact, cards now are running experimentally at 10 times the speeds possible in 1948.

In the same 17 years, the speed of spinning frames and conventional looms increased 70 per cent. And shuttleless looms were developed which are doubling the speed of conventional looms. The shuttleless looms have filling yarn cones that will last a full eight-hour shift.

Such improvements in machinery have brought about tremendous gains in plant efficiency and the productivity of employees.

FOR EXAMPLE, in Springs we recently converted our big Lancaster Plant from regular cards to high-speed cards. The change eliminated about 1,000 cards, leaving 110,000 square feet of vacant floor space.

In that space we built a $5 million combed cloth unit with 23,800 spindles and 405 looms. The unit employs 176 persons — and these are NEWLY-CREATED jobs.

Let's take an INDUSTRY-WIDE example of higher productivity brought on by mechanical automation:

In 1954, the cotton textile industry alone had nearly 23 million spindles, almost 400,000 looms and about 296,000 employees. The industry produced 10 billion, 892 million square yards of cotton cloth that year.

In 1964, ten years later, the cotton textile industry produced almost as much cloth (10 billion, 754 million square yards) with nearly 31½ million FEWER spindles, about 100,000 FEWER looms and with 63,000 FEWER employees.

Some of these 63,000 people, incidentally, now are employed in the expanding synthetic textile industry.

As you can see, in 1813 it took 12 plants with more than 246,000 spindles to equal the production of one 20,000 spindle plant of today. By 1850, it took 4½ plants with about 90,000 total spindles to equal the output of a 20,000 spindle plant of today. By 1900, this was down to 2½ plants with about 46,000 spindles, and by 1920 it was down to 2 plants with a total of 40,000 spindles.

By 1940, 1½ plants with a total of about 33,000 spindles were needed to equal a 20,000 spindle plant of today. By 1950, this was down to 1½ plants. And in 1960 a plant of 28,440 spindles was needed to equal the production of a 20,000 spindle plant of today.

This gives you some idea of the rapid changes now taking place in the industry.

(2) MATERIALS HANDLING AUTOMATION has been coming along fast in the textile industry — but only in recent years. It saves money because it reduces the amount of hand labor needed to move things from one place to another.

Most textile plants of 50 to 100 years ago were built three or four stories high. Bobbins, quills,
An example of this is a continuous process which starts with a bale of cotton and winds up with breaker drawing sliver. In contrast, the conventional production method uses four separate processes—opening and blending, picking, carding and breaker drawing.

Other automatic processes are being developed, too—such as continuous automatic spinning. This system takes cotton from the bale to the yarn in one continuous flow.

This has been called a system in which the fiber is "untouched by human hand," but that's not quite true.

Continuous automatic spinning was developed in Japan. It's in use now in several mills in that country.

Today, there are a number of bale-to-slvier automated systems on the market, and at least 10 established sliver-to-yarn systems are being offered. In addition, many separate pieces of machinery now are being produced that are highly automated in themselves and capable of high speeds. And systems are being developed that completely eliminate production steps.

Incidentally, finishing plants are far more advanced than are grey mills in continuous flow production. Our Grace Bleachery, near Lancaster, has been using continuous process bleaching and dyeing since the plant was built in 1948.

(4) Now, let's look at PLANT AUTOMATION:

An important factor affecting the successful use of all other textile developments is the construction of well-engineered, modern plants with built-in automatic controls.

Old plants presented a problem—and still do, since many are still in use. In fact, despite the rapid pace of modernization, a majority of the textile plants in use today are old plants. Temperature and humidity control in these older plants is inadequate, for the most part. Old plants cannot be refrigerated effectively and there is no control of air flow.

In contrast, new textile plants have precise automatic control of temperature, air flow, and humidity thorough refrigeration and air conditioning.

(5) PAPER AUTOMATION

There's one final area in which the textile industry is automating—the old Army game of shuffling papers. Key punch operators, programmers and technicians have taken the place of the batteries of typists, clerks and bookkeepers formerly needed to handle the immense volume of paper work existing in any large company.

(Continued on page 12)
TEXTILE AUTOMATION — AND PEOPLE
(Continued from page 11)

Just about all large textile companies now use automatic data processing to do their paper work. In Springs, we have been using automatic data processing since 1957. Our computers perform more than 2,000 different jobs. We are now in the process of phasing in two new high speed third generation computers.

Data processing gives us, and other companies, capabilities we could not achieve otherwise. For example, we can compute our payroll for 16,000 employees in less than 15 minutes. And our pay checks are printed out automatically at the rate of 285 per minute. It would take 225 typists to match that speed.

IV. WHY AUTOMATE?
Why is it necessary to automate in the textile industry?

There are many reasons. Here are a few of them:

(1) We must increase our capacity to produce, despite an increasingly SHORT SUPPLY OF LABOR — especially skilled labor.

(2) We must increase our efficiency in order to meet COMPETITION AT HOME AND ABROAD.

(3) We must reduce our costs per unit produced in order to HOLD PRICES at levels that are competitive.

(4) We must find ways to INCREASE OUR PROFITS in order to MEET RISING COSTS, and in order to ATTRACTION MORE INVESTMENT CAPITAL.

(5) We must speed up our production to SATISFY A MARKET that demands service, flexibility, faster deliveries and swifter style changes.

Although there is a definite trend toward automation in the textile industry, it is not a simple matter of shelling out the money and buying yourself a completely automated operation. The manufacturer must consider many economic factors.

Here are just a few of them:

(1) How much will it cost me to automate? Automated systems cost an estimated 25 per cent more than conventional production machinery. Will the profit return justify the additional investment? (Textile manufacturers averaged a profit of 8.5 per cent on their investment in 1964, compared with 11.6 per cent for all manufacturing industries. On the basis of sales, textile manufacturers made a profit of 3.1 per cent in 1964, compared with 5.2 per cent for all manufacturing industries.)

(2) How long can the equipment in question be run before other technological advances will make it obsolete? This is a critical factor. In the old days, machinery could be run until it wore out. Today, machinery must be replaced when it can no longer compete with something newer, faster, and more efficient. This means getting rid of machinery that has many more years of life left in it — too many times even before we've paid for the original investment.

(3) Can the equipment be run fully? Automatic equipment must be run full-time, 24 hours a day, in order to pay out.

(4) Is there a sufficient local supply of skilled labor and technicians to staff an automated operation? This may become a serious problem unless technical training is expanded. Skilled technical people already are hard to find.

VI. STATUS OF AUTOMATION TODAY
The trend toward automation in the textile industry offers a combination of great advances and stern challenges.

As the industry continues to consolidate, the leading companies must become larger so that they will be able to take advantage of automation.

This will help the large companies, but it will place the smaller companies and the less efficient companies under even heavier competition. Many will not survive. They will either go out of business or be absorbed by the larger companies. This will tend to eliminate over-capacity and to create a more stable industry.

While automation offers the opportunity for great advances, it is costly and companies will need to budget increasing amounts for capital expenditure. Around 1900, the cost of building a new plant was about $1,300 per employee. Older plants in operation today represent an investment of $6,000 to $10,000 per employee. New plants of the last two or three years represent an investment of $30,000 to $35,000 per employee. One plant now under construction will represent an investment of $50,000 per employee. Another, with a high degree of automation, will exceed even this figure. To afford such an investment, companies must be strongly capitalized.

For strong, well-managed companies, able to keep pace with changing technology, the outlook is good. Automation should mean more efficient use of plant space, greater productivity per employee, lower unit costs, greater speed of production, higher quality — and higher profits.

These gains will give the U. S. textile industry a greater ability to compete with foreign manufactur-
ers, since the differential of cheap foreign labor will become a smaller factor.

From an industry-wide point of view, textile automation probably will mean fewer textile employees in the long run. No one can say how many jobs will be affected, but it is only common sense to recognize that better plants, more automated processes and more efficient methods eventually will enable fewer people to produce more goods.

But the textile industry will not move toward automation without serious concern for the people whose jobs may be eliminated.

A public opinion survey showed recently that in the South, where the textile industry is concentrated, 35 per cent of the people feel that large companies make a genuine effort to avoid hardship on workers whose jobs might be eliminated by automation. The percentage should be increased, because it’s true. Companies are trying to avoid hardship to employees.

The stronger textile companies will go considerably beyond this. They will protect the jobs of their employees, and create job opportunities for new employees, by becoming more efficient, more diversified, and more competitive—producing GROWTH. People with job skills and technical abilities will be in particular demand. Frankly, it is the UNSKILLED who will lose out.

I can tell you that Springs has moved in this direction. Our decisions on when and where and how to modernize have been influenced by our concern for our people. And I am glad to say that modernization has enabled us to grow. In the last three years, we have built or started work on five new plants, and we have modernized a half-dozen older plants.

This has made it possible for us to create 2,000 additional jobs in our company in three years. In that time, we have spent or committed more than $65 million for modernization and new plants.

The combination of all of the factors I have mentioned will bring RISING STATUS to the textile industry and to the textile employee. And the stronger textile industry that will result will be able to PAY TEXTILE EMPLOYEES HIGHER WAGES—a point of great significance in the textile South.

Such a forecast as this can only be viewed as a very long-range outlook. The staggering cost of a massive transformation of one of the nation’s largest industries cannot be borne in a short span of time.

But AUTOMATION IS COMING—and with it will come brighter prospects for the textile industry and textile employees.
The "Inside Story"

about

Fletcher Shuttles

They look pretty much alike, shuttles do. At least, on the outside.

Deep down inside is where the real quality is built in.

For instance, take the Fletcher Tuftmold® Shuttle. The inside story begins with the plastic itself.

You could simply use a high quality, recommended plastic and save all that time and research. But not when you set out to make the best plastic shuttle.

We selected the finest industrial phenolic available. One with a blue ribbon pedigree. Backed with tests and proofs. We added a closely-woven base for strength and durability.

Then we put it through our own brutal tests. You know, the kind where those mechanical bullies in the lab demand unbelievable performance.

Well, when the new shuttle passed these tests the research team waited for front office applause. Instead, back came an additional demand, "Now take off some of the weight".

We did. It took endless hours of toil and sweat. But we did.

You can understand that after those extra months of effort we'd like to keep how it was done a secret. You'll feel for yourself how light a Tuftmold is. You'll be surprised at its strength and durability.

But please don't ask how we did it.

We don't want to let our "inside story" out.

Tuftmold is the name for our new all plastic shuttle

FLETCHER SHUTTLES

Southern Pines, North Carolina

The one complete line of shuttles and Shuttle Parts.
As the 1965-66 school year comes to a close, Clemson University will lose the services of a man dedicated much of his life to the textile industry. Professor Maurice Goldemberg has announced his plans for retirement after an outstanding service record of thirty-eight years in textiles and textile research.

Born in 1901, in Paris, France, Professor Goldemberg attended grade school and high school in Paris. In 1921, he received his degree in Chemical Engineering from the National School of Advanced Chemistry in Paris, and his M.S. degree from Sorbonne University in Paris, France.

Beginning in 1921, he served in the Chemical Corps of the French Army for two years. After discharge from the army, he came to the United States in 1924.

He served as head of the Analytical lab of United Piece Dye Works of Lodi, New Jersey, from 1924 to 1928. From 1928 to 1936 he was in charge of Development in the Wrighting Department of U. P. D. W. of New Jersey. In 1936 he became a Research chemist for Sunbury Converting Works as the Plant Chemist. In 1946 he was made Technical Director of the Dyehouse of U. P. D. W. of New Jersey, and in 1951 Mr. Goldemberg moved to the United Piece Dye Works plant in Charleston, South Carolina, to serve as the Director of the Dyehouse and Laboratory.

Mr. Goldemberg came to Clemson in 1959 to serve as associate professor in the Textile Chemistry department of the School of Industrial Management and Textile Science. He is a member of the American Chemical Society, the American Association of Textile Chemists and Colorists, the French Engineers in the United States, and The American Association of University Professors. He has served as a member of the Research Faculty Council here at Clemson, and also as advisor to the Clemson University Hillel Club.

Professor Goldemberg is married to the former Lisette Grimberg, an accomplished pianist. They have two children. The Goldembergs attend the Temple of Israel in Greenville, South Carolina.

After retirement, Professor Goldemberg plans to reside in Clemson but plans to do a great deal of traveling both in the United States and abroad.

The Bobbin and Beaker staff would like to extend to you, Maurice Goldemberg, the very best of luck.
A Better Situation for Fibers

A fiber supply situation without much of the uncertainty of the past decade is shaping up for the American textile industry.

President Johnson’s acceptance of a new farm bill on November 3 insured that the industry would be able to purchase American-grown cotton under a one-price system for the next four years. The one-price system provides cotton to American mills at the same price it is sold overseas.

In addition, production capacity of the man-made fibers industry continues to grow, with predictions of a 40 per cent increase in output in the next five years. Man-made fibers accounted for more than 40 per cent of all fibers consumed by the S. C. textile industry in 1964, the highest percentage ever recorded.

Cotton consumption during the 1964-1965 crop year which ended July 31 was the highest since the 1955-1956 crop year, with 9,170,865 bales being used. Although the mills’ use of cotton was up sharply, cotton accounted for only 54.5 per cent of all textile fibers used by U. S. mills. That percentage is the lowest since the invention of the cotton gin.

The fiber supply situation is an important element in the textile industry’s competitive position.

The growth of the man-made fiber industry and the continuing refinement of individual fibers such as rayon, acetate and nylon, plus the development of other fibers, increases the need for utmost quality in natural fibers such as cotton and wool. As the fibers themselves improve, there is a corresponding increase in the potential for new, different and better yarns and fabrics.

Recent industry developments such as stretch fabrics and durable or permanent press finishes have been made possible because of the availability of high quality fibers at reasonable prices. Both quality and price are necessary because of the extra finishing operations which mean added production costs.

As more and better products are turned out, the U. S. textile industry is in a better position to hold its traditional markets and to build new ones against the pressures of both foreign-made textiles and domestically produced non-textile products.

The textile industry’s record in the face of all these pressures has been an enviable one. Wholesale prices for textiles generally have dropped about 10 per cent in the last 15 years while wholesale prices for other industrial commodities have increased almost 30 per cent. In addition, textile wages are at a record level and the industry is operating at almost full capacity.

Behind the healthy economic position, however, is the fundamental ability of the industry to purchase its raw material—its raw fibers, both natural and man-made—in a market more free of unnatural pressures than at any time since the middle 1950’s.

Courses for Professional Development - 1966

The School of Industrial Management and Textile Science series of Professional Development courses for this summer will be:

May 23 through 27
P.D. 96—Color Measurement Seminar

May 30 through June 3
P.D. 22—Introduction to Textile Manufacturing, and Finishing

May 30 through June 10
P.D. 25—Yarn Manufacturing
P.D. 41—Methods Analysis and Time Study
P.D. 43—Basic Textile Chemistry
P.D. 47—Quality Control
P.D. 84—Technical Report Writing and Communications

June 20 through 24
P.D. 79—Graduate Seminar in Industrial Administration (Session 1*)

June 20 through July 1
P.D. 25—Yarn Manufacturing (A repeat of May 30-June 10)
P.D. 38—Supervisor Development
P.D. 41—Methods Analysis and Time Study (A repeat of May 30-June 10)
P.D. 44—Advanced Textile Chemistry
P.D. 56—Weaving: Fabric Design and Development

*A person may enroll in either Session 1 or Session 2, or both.

This summer will mark the ninth year of the Professional Development program, designed to keep persons in industry abreast with advancement in science, technology, and Management.
Outstanding Seniors... 

W. RYAN HOVIS

Ryan Hovis is a twenty-three year native of Rock Hill, South Carolina. He is majoring in Textile Chemistry and has received an Allied Chemical Foundation Scholarship to help with his expenses.

On campus Ryan is a member of Phi-Psi honorary textile fraternity and the York County Clemson Club. Last year he served on the Junior staff of the Tiger and also the Junior staff of the Taps.

Ryan gained valuable experience before coming to Clemson while working for two years full time in the Research Laboratory at Rock Hill Printing and Finishing. He also works there in the summer.

Ryan plans to attend graduate school after graduation but as yet he has not decided upon the institution.

ARCHIE L. HARMAN

Archie L. Harman is a twenty-one year old Industrial Management major from Lexington, South Carolina. He has received scholastic honors for his last six semesters at Clemson.

On campus he has been active in several organizations including Iota Mu Sigma, the honor society for Industrial Management majors, and Kappa Delta Chi social fraternity. His main interest is in politics, and while at Clemson he has helped organize and has served as president of Clemson University’s Young Democrats. Archie has also been active in student government serving as a Junior and a Senior Senator. He is now chairman of the Senate’s General Affairs committee and has served as a delegate for Clemson to the South Carolina student legislature for the past two years. He is also a defense attorney for Clemson’s High Court.

Archie has worked as a page in the United States Senate and with a law firm in Columbia. After graduation he plans to attend Law School at the University of South Carolina.

MILTON K. COBB

Milton Kinsier Cobb is a twenty-two year old Textile Science major from Cleveland, Tennessee. He is married to the former Eva Hay of Cleveland.

Kin was a member of the American Association of Textile Technology and is serving as program chairman for this year. During Kin’s stay at Clemson, he has been active in intramural sports.

Kin has gained valuable experience in the textile industry by working during summers. He has spent three summers working at Cleveland Woolens Division of Burlington, Inc. in the yarn control department, cloth room, dressing, stock dye, supply room, and blending and waste house. He has worked one summer at Gerrish-Milliken in the weave room.

After graduation, Kin plans to accept a position with either Beaunit Fibers or Burlington Industries, Inc.
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Frank A. Burtner
Professor of Sociology, Clemson University

The demise of an human being, or an organization, presumes a beginning, and so it may be recorded that THE BOBBIN AND BEAKER was conceived in November 1939, as a spring semester project of Phi Psi, National Textile Fraternity. As with all organizations, the precise date of conception is no more than a concession to accounting, for as the editor of Volume I, Number 1, observed, "How long the idea of a textile magazine remained in the back of somebody's mind will probably never be known."

While the exact date of conception and the period of gestation were indefinite, the date of birth and formal statement of purpose were, on the contrary, quite certain. The first issue of THE BOBBIN AND BEAKER, Official Textile Student Publication of Clemson A & M College, donned its swaddling clothes in March, 1940, and proceeded to the accomplishment of its purpose, that purpose being, as stated by the original editor, "...to deal with the interdependence of the textile school and the industry, and to maintain contact with the textile school graduate." Further amplification of this purpose and some indication of its means of attainment are to be found on "The Editors Page" of the initial issue: "THE BOBBIN AND BEAKER tries to cover all phases of the textile industry...As students we can write only in general terms, or correlate reading material. It is up to the readers in the plants to give us the technical articles and discussions that will be the life of the magazine." With these statements of means and ends, two thousand copies of the magazine were distributed to textile plants in North and South Carolina, one thousand to students, alumni, and friends, and two hundred at the 37th Phi Psi Convention in Philadelphia. And thus, and again according to the editor, "the first college magazine in the South" found its way into the world.

First or last born ventures in 1940, the health of the newborn notwithstanding, emerged into an uneasy environment destined to disintegrate rapidly into hostility. After four years, the fifth issue of THE BOBBIN AND BEAKER, April, 1943, announced the suspension of publication "for the duration of the present war." This same issue announced the resignation of H. H. Willis as Dean of the School of Textiles and appointment of R. K. Eaton as Acting Dean. In tune with the times was the "Guest Editorial" entitled, "Planning For Peace," by W. M. McLaughin, Secretary and Treasurer, American Cotton Manufacturers Association, a description of a poster advertising Cotton Week bearing the slogan, "Cotton Fights On Every Front," suggested by Col. Robert T. Stevens, and an explanation and photograph of the Phi Psi Service Flag.

Publication of THE BOBBIN AND BEAKER was not resumed until January, 1947, two years after the appointment of H. M. Brown as Dean of the School of Textiles and Head of the Textile Management Department. An uninitiated staff had its problems, and the solution seemed to lie in continuation of the original purpose and format of the magazine: "Guest Editorials" by men prominent in the textile industry, reports on research by members of the Textile School staff, articles emphasizing the economic and human relations aspects of the industry by staff members of other Schools within the College, reprints from professional textile journals, Phi Psi News, Textile School Faculty Notes, news of alumni, and occasional reports of new developments within the industry.

While the resumption of publication was auspicious, made so by booming enrolment occasioned by returning veterans, the fortunes of THE BOBBIN AND BEAKER soon began to reflect the changing environment of Clemson's academic community. Student participation waned markedly less than ten years after resumption of publication, and this trend continued to the present. Under these circumstances, the magazine became, in substance, a forum for reports and articles by members of the faculty with occasional contributions by men in industry, plus a miscellany, largely personal in nature, concerning students and various campus activities. The valiant effort to measure up to its original aims continued with the appointment of Gaston Gage as Dean of the School of Textiles but, except for a dedicated hard-core of Textile majors, student participation in publication continued its steep descent. This trend became even more pronounced with the merging of the Department of Industrial Management and the School of Textiles and, with the retirement of Gaston Gage and the appointment of W. D. Trevillian as Dean of the School of Industrial Management and Textile Science, THE BOBBIN AND BEAKER as-

(Continued on page 20)
FOR EVERYTHING THERE IS A SEASON

(Continued from page 19)

sumed a managerial and professional, rather than technical, complexion. In this context, student participation was further disadvantaged and limited to summary reports on undergraduate research, largely in the field of management. THE BOBBIN AND BEAKER, essentially a student publication was constantly plagued with financial deficits and under changed circumstances, no longer found it possible to live up to its original aims.

Within the span of its period of publication, THE BOBBIN AND BEAKER took note of a number of events, trends, and personalities, a random sampling of which would include: the death of President E. W. Sikes, ... the Government Cotton Spinning Laboratory ... Textiles in the war effort ... Deering Milliken Research Trust ... Japanese textiles ... Textiles through the microscope ... Nylon as a textile fabric ... American Society of Textile Engineers ... Orlon ... Expansion program of the School of Textiles ... National Maid of Cotton visits Clemson ... dedication of Sirrine Hall ... N.T.M.S. and A.A.T.T.C. ... In Memoriam: Prof. W. G. Blair ... Ramie ... an address by Dr. Ellison S. McKissick ... establishment of a Cotton Ginning Laboratory ... stretch yarn developments ... Textile School Gets Coed ... woven industry comes South ... the new Sirrine Library ... graduate research in Textile Chemistry ... Saco-Lowell Research Center ... the use of electronic computers in the textile industry ... the export challenge ... Dan River celebrates 75th anniversary ... Mills to battle U. S. policies ... Quality control ... Clemson delegates attend Fancourt Seminar courses for Professional Development ... The Textile Comeback ... The Industrial Management Society ... Industrial Management Seminar Series.

As pointed out in an earlier connection, organizational goals, no matter how realistic originally, no matter how admirably achieved, inevitably find themselves unfitted to changed needs and situations. It is axiomatic that organizational goals must be in tune with their environment, else the organization falters, stagnates, eventually dies. For an extensive period of its existence, THE BOBBIN AND BEAKER achieved its goal to serve as a medium of exchange between school and industry but, as textile technology has become increasingly complex and management more sophisticated, exchange has become predominantly a one-way affair. Professionalization in specialized areas and on managerial levels has made it impossible for the student equipped with only basic tools, limited experience, and a crowded curriculum to uphold his part of the intended dialogue. Professional journals provide technical information and contact with graduates of the textile school are maintained through the Office of Alumni Affairs. In short, the projected goals of 1940 are ineffective in the changed environment of 1966.

And so 25 years, 63 issues, 27 editors, 10 faculty advisers, and 5 Deans later the terminal issue of THE BOBBIN AND BEAKER goes to press. Applause in appreciation for a job well done is in order for all those who have been associated with the magazine. Their place in the history of the Textile School is secure.

Editors, Faculty Advisers, and Deans under whose aegis THE BOBBIN AND BEAKER has been published:

Editors:
C. E. Anderson
W. R. O'Shields
G. E. Williams
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R. J. Cheatham, Jr.
B. K. Sutton
W. M. Kirby, Jr.
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G. A. Mobley
R. R. Fowler
Ben Wilson
R. F. Compton
C. H. Ferguson
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Alan Bell
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W. E. Barrineau, Jr.

Faculty Advisers:
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M. D. Moore, Jr.
R. K. Eaton
A. E. McKenna
H. M. Brown
C. V. Wray
Gaston Gage
D. P. Thomson
W. D. Trevillian
C. H. Whitehurst, Jr.

Deans:
H. H. Willis
R. K. Eaton
H. M. Brown
Gaston Gage
W. D. Trevillian

To the Editor and Mrs. Houx:

I have set the type for every issue of THE BOBBIN AND BEAKER over the years and I am truly sorry that it will not be published again. I shall miss it, I am sure.

Thanks to both of you for being so agreeable to work with. I wish each of you the best of everything.

(Mrs.) Jewel Lewallen

THE BOBBIN AND BEAKER
The Clemson plant of the Jacobs Manufacturing Company, a subsidiary of the Chicago Pneumatic Tool Company, is engaged in the assembly, inspection, packing, and shipping of drill press parts. The products consist mainly of arbors, chucks, keys, units, sleeves, and key holders. Workers in the assembly and inspection departments are paid on a production basis, but at present, workers in the packing department are paid on an hourly basis.

The purpose of this study was to determine if the packing for shipment job could be placed on an incentive, and if so, to develop and propose such a plan. The job was analyzed by using various analysis techniques and broken down into fundamental elements. Standard times were found for each of the elements by using a stop-watch time study analysis. Standard times were found for each size shipping package used by the company, ranging from a "#0" shipping bag to a "#20-SHIPPER" box.

Because of the large number of variables present in the shipping job, the authors recommended a 50-50 Premium plan of wage payment, with a guaranteed minimum wage equal to the present hourly wage. This would have the effect of dampening the deviations caused by the variables. The formula for computing the wages was given, as well as a graphic representation of the wage structure.

It is the opinion of the authors that the packing job does not lend itself very readily to an incentive wage payment plan. However, we believe the basic structure of our plan is suitable to the job. Any flaws which might exist in the plan could very well be eliminated by a more extensive analysis using the same techniques and principles.
TEXTILE FACTS

South Carolina

Geographical Range: 344 plants are located in 37 of the state's 46 counties.

Employment and Payroll: Nearly 140,948 employees annually earn more than $460,270,287 representing 60.4 per cent of the state's industrial payroll.

Value of Products: $2,381,374,524 for the fiscal year ending June 30, 1963, representing 57.3 per cent of the value of the state's industrial production.

Productive Capacity: 6,954,478 spindles, accounting for 33.3 per cent of the nation's active spindles as of June 30, 1963; 153,879 looms; produced 1,039,000,000 linear yards of cotton broad-woven goods in the first quarter of 1963 to account for 41.9 per cent of the national total.

Cotton Consumption: 2,592,614 bales of cotton during the 1962-63 crop year, or approximately 30.1 per cent of the total domestic consumption.

About five of every six bales consumed in South Carolina mills come from other cotton growing states.

South Carolina is now the nation's greatest producer of broad-woven goods. Its finishing plants process about 30 per cent of the nation's cotton yardage.

The annual value of textile products in the Palmetto State has almost tripled since World War II and now approaches two billion dollars.

The measurement of any textile industry is the number of active spindles and looms, and the production that comes off of them.

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