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The Bobbin and Beaker Vol. 1 No. 1

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Cover Photo By ROBERT TAYLOR
A Future In Textiles

Guest Editorial By Wm. P. Jacobs, President Presbyterian College

One of the most serious fallacies in modern life is the thought of the young man that all of the lands have been conquered, that the day of the pioneers has passed, that the door is closed to initiative. As a matter of fact, the door is wide open. There is a great future in most industries.

Textile engineers tell us that we are still facing the process of liquidation in the textile industry. Fortunately for us, most of our mills in the South are pretty well modernized and are capable of meeting the test of a long pull through narrow margin periods. Large profits are probably a thing of the past in the textile industry. But research in processes and machinery has fitted our mills to meet severe competition, to produce goods at lower proportionate costs, and to weather the storms. But even in an industry that is over-manned there is a future for the youth of the land.

I believe that college graduates have usually found an opening in the industry, and I predict that they will continue to find such an opening, and if they have ability in the field of engineering, research or production, they will rise, no matter how severe the competition. Who knows but that a Clemson graduate will unearth discoveries that will revolutionize the textile field? There are opportunities for initiative, but initiative, self-determination, the will to succeed are absolutely essential to success in the textile industry or in any other industry.

It is my belief that the process of production in the textile industry has made much more rapid strides than other phases of textile work; that science has served the producer better than it has the seller. It is my belief that in the field of merchandising there is a greater opportunity for the young textile graduate than in any other field.

We need new textile salesmen, not only salesmen that can take a given product and sell it smartly, but salesmen who can style the product; who can make it more adaptable to the market; salesmen who can advise in general merchandising policies; and what is more than that, salesmen who can build a new market for textiles. No one knows whether we are making too many cotton goods today or not. No one can foretell the future, but it is safe to say that any man who specializes in the study of the merchandising angle of textiles, any man who goes out and develops new fields for textiles, will be performing a constructive service for the industry, and will find his profits more quickly.

For instance, we need in South Carolina several hundred more small fabricating units to take the textile products which are made in this state, finish them or have them finished, and make them into the articles for wearing apparel or other use. While plants have been growing up all around us, South Carolina has not kept pace with this development. There are millions of dollars of South Carolina capital in hiding or invested in other industries elsewhere, which might just as well be brought back home, if the enterprising, dependable, ambitious young men can be found in this state who know enough about the essentials of textiles and have enough confidence in their ability to launch out into the field of textile fabricat-

(Continued on page 17)
College Graduates In The Textile Industry

As Told to the Author by Brown Bahen

By W. W. Foster

For the technically trained man the field of textiles is virtually wide open. There are opportunities everywhere for the man with the training and ability and energy. The field of textiles has so many different types of jobs that it would be difficult to enumerate them. The possibilities for a man in this field are limitless. There are so many different directions that he could take that it is impossible to predict just how far one could go. It is possible to reach the top in one phase of the textile industry then step over in another part of the field and be just at the beginning.

The number of technically trained men per capita in the textile industry is very small. Textile schools as compared with schools training men for other industries are indeed a very small minority. The number of college trained men in the textile industry who have jobs as departmental foremen and even plant superintendents is relatively small. It is true that the Textile Schools are turning out men every year but the industry is so large that these men are immediately absorbed and the demand for college trained men is still open.

The textile industry today cannot get along without trained experts. Foreign manufacturers and the great volume of the industry in our own country has placed the textile industry on a highly competitive plane. New machinery is not demanding more work from the laborers but more skill and only men thoroughly trained can efficiently employ and direct the great mass of labor in the industry. In the last decade only has the textile industry felt the effect of efficiency experts and cost engineers. But the industry as a whole is untouched by these aids. If the textile industry of the United States is to maintain its standard of high wage payment it is through the medium of more efficient organization, superior machinery, and a high quality product. Many mills today operate under a high overhead because they simply have not awakened to the fact that their methods are obsolete as well as their machinery. Such positions as job analysis and efficiency experts are open only to college trained men and this phase of the textile industry is just now beginning to grow. The opportunity is there, all one needs to do is knock.

A college man trained in textiles is well suited for an executive’s job in the industry. He has a thorough working knowledge of the industry, he actually knows and understands the machinery and yet his education is broad enough to enable him to step right into the executive field. For a college man who has a chance to get into the executive field nothing will help as much as some practical experience. While he is getting this practical experience he will learn a great deal about that most vital element of any industry—the human element. This will prove of inestimable value to him when he begins to act in an executive capacity. On the other hand a man only trained in business administration or some other type of business which failed to equip him with the fundamental knowledge of the textile industry would be at a disadvantage as an executive in the textile field because he would not understand the actual production problems of the industry. His greatest disadvantage would be that he would have no practical experience and would not have a thorough understanding of the workers in the industry.

Theoretical training in any industry is not enough. One may know everything that has ever been printed about a subject but unless he is able to apply what he knows his training has been useless. Theoretical training is vitally necessary but unless it is backed by practical experience it is virtually worthless. Practical experience on top of technical training is an advantage that cannot be overcome by either of the two by themselves. The only way to know a particular machine is to actually work with it. A man is really just beginning to study when he graduates from college. Every day something new is brought out and the only way to learn about it is by studying. College is supposed to teach you how to study, to separate the grain from the chaff. It is this quality that gives the trained man an advantage over the untrained man.

Getting the right start is the essence of success in any business. Don’t get licked before you

(Continued on page 19)
Artificial Fibers In The Spotlight

By E. R. Roper

Rayon and synthetic fibers are here today and are here to stay. This new decade, beginning with 1940 marks the fourth stage of its growth. The first stage, from 1912 to 1919, in which the industry was new experienced the education of the public to these products, and the overcoming of technical difficulties. The second stage, from 1920 to 1929, in which production was increased rapidly, introduced the acetate and cuprammonium processes to this country, and the consumer realized that products with desirable properties of their own had definitely established themselves as textile fibers. In the third stage, from 1930 to 1939, production levelled off and new yarn qualities were developed such as pigmented yarns, multifilament yarns, and cut staple fiber. The fourth stage is beginning. Other manufactured yarns are making their appearance. The Italians have developed an artificial wool made from casein named "Lanital." Du Pont has developed a mineral fiber called "Nylon." The role that artificial fibers will play now that the European war has limited imports is another factor that this decade makes potent.

Will production in the U. S. be increased? Will the demand for cellulose be met by the wood pulp industry? If so, the South will be immediately affected because the wood pulp industry is moving south so that it might have access to the low cost, rapid growing short leaf pine that may be converted into pulp.

Rayon filament was first produced abroad in 1890, the pioneering countries being Belgium, France, Germany, and Great Britain. However, in 1911, the U. S. became the largest producer of rayon filament and has remained so except for one year, 1937, when it was outranked by Japan. U. S. per cent of world production has risen steadily from 7 per cent in 1913 to 28 per cent in 1938. In 1920, Great Britain was the second largest producer with 18 per cent, followed by Germany with 16 per cent. In that year, Japan produced only 1 per cent of the world's supply. Both Great Britain's and Germany's percent of world production has decreased, giving away to Japan. This nation has risen from the lowest producer in 1920 to the second largest producer in 1938.

Two years ago, the total production of rayon filament was 990,245,000 pounds of which the U. S. consumed 274,062,000 pounds or 27.7 per cent of the world's total of which only 262,000 pounds were imported. It would seem that the U. S. is the largest producer of rayon, and at the same time practically self sufficient.

The average price of rayon filament has shown a steady decrease since 1911. That year, U. S. 150 denier viscose yarn sold for $1.85 per pound. On July 29, 1938, the same yarn sold for $0.51 per pound. The highest prices were from 1914 through 1920 when the price rose from $2.00 to $6.00 per pound. After the World War, the price became steady and continued to decline due to larger consumption and cheaper production.

The problems that confronted Rayon, or artificial silk of a cellulose base, have not only been technical ones, but also economical ones. At first, and particularly in England where rayon was used as an adulterant of wool, prohibitive tariffs hampered its development. The public had to be educated to the new fiber. Formerly rayon was considered an artificial silk, a fiber that would duplicate and perhaps replace silk. To correct this view the National Retail Dry Goods Associations appointed a committee to select a new name that would exclude the word silk. The name "Rayon" was proposed and adopted unanimously.

The processors handled rayon with cotton machinery where such could be used. In fact, it has not been until recently that machinery for rayon and rayon only has been developed. Such machines include twisters, warpers, silk looms, and stainless steel finishing equipment. Rayon, although of the same chemical nature as cotton, possesses properties remarkably different from cotton. Excessive friction frays it, high temperatures play havoc in slashing, and the effect of too much tension might not make itself evident until the goods are woven. Particularly delicate is acetate rayon.

The finishers have their headaches too. The regenerated rayons, Viscose, and Cuprammonium possess properties similar to cotton, but for acetate, a cellulose ester, entirely new dyes have had to be perfected. One might wonder why such a finicky fiber as acetate might survive. Acetate possesses qualities infinitely different from the other

(Continued on page 14)
Importance of The Clemson Textile School

The Textile School’s and Industry’s Independence Upon Each Other

By Prof. R. K. Eaton

The subject assumes that the Clemson College Textile School is now important in the educational and industrial system of the state. Some of you may know that the Faculty of the Textile School cooperate with the mills of the state in every possible way; at times we are able to make tests for them, which can not be successfully carried out in the mills. Our most frequent service is check testing—that is, the mills make their routine tests and then the same tests are checked at the school under controlled conditions. Another service rendered the mills is furnishing trained young men. While we do not maintain an employment bureau, we do keep records of our graduates and try to help them advance in manufacturing and at the same time send to the mills young men who will be useful in their organizations.

There are many South Carolina families who believe that we have rendered good service, for they are sending their sons to us in increasing numbers each year. The Textile School appreciates that faith and tries in every way to continue to deserve it.—We are preparing our students to enter into the second largest industry in the state. Of course, agriculture will always be our largest industry and Clemson College will always be the fountain head for all scientific agricultural information and research.

Since I have mentioned agriculture, it might be well at this point to tell you that there is no animosity between the cotton manufacturer and the cotton farmer. After reading the newspapers recently you may have formed the opinion that manufacturers are fighting against the cotton farmers. Nothing could be further from the facts. Textile manufacturers desire the cotton farmer to be prosperous. They have encouraged the Clemson Agricultural Extension and County Agent Services and have backed cotton farming experiments. Not so very long ago cotton manufacturers were the people who offered the cash prizes which were paid to cotton farmers for outstanding accomplishments. Their interest encouraged the farmers to improve their staple, and as a result South Carolina now raises cotton more than 50 per cent of which demands a premium price—

More important is the fact that South Carolina cotton can be converted locally. Not so many years ago our mills were importing cotton from the west.

When the mills were built in South Carolina, they were equipped just as were all other mills in the world, and for thirty or forty years all the cotton mills of the country have used the same type of machinery and approximately the same number of operatives per pound of product. This was modified by various state laws.—A few years ago it occurred to some smart manufacturer that there might be a better way of utilizing his machinery and operatives; since that day all manufacturers have been studying, planning, and experimenting. Of course, some of the experimenting with the operatives has resulted in some unfortunate strikes, but on the whole, textile workers are being benefited rapidly and steadily. There will be fewer workers necessary, but those who do work in the mills will be high wage earners. This change will be accomplished by the use of improved machinery which is now being offered for sale to the mills.

(Continued on page 15)
Facts About Rayon

By R. C. Forrester and J. M. Heape

Rayon, a relatively new textile fiber, has made great strides in the past few years. Chardonnet, now widely acclaimed as the “Father of the Rayon Industry,” secured his first French patent on Rayon in 1884. Since Chardonnet’s time, many famous scientists have devoted their lives to the development of Rayon, and therefore the perfection of this fiber cannot be attributed to any one man. The first American Companies were founded about 1900, but they began to operate successfully only after having overcome great financial difficulties.

Previously in this article, the fiber has been called rayon, but its original name was “artificial silk.” The manufacture of “artificial silk” caused such a decrease in the consumption of real silk that the importers of real silk urged that another name be given to the new fiber. The National Retail Dry Goods Association then changed the name from “artificial silk” to “Rayon.” The changing of its name gave this new fiber much publicity and helped its growth tremendously.

In 1911 the production of rayon was only 365,-000 pounds, but by 1925 it had jumped to 36,330,-000 pounds. The production for 1940 is predicted to be about 400,000,000 pounds, which shows that the growth of this fiber has been sensational. In America there are 29 rayon plants, which are owned by 18 firms. These plants employ 57,000 persons and pay them 65 million dollars in wages annually. Due to the mass production of this fiber, it seemed as though there would be a surplus, which would be detrimental to the selling price. As a matter of fact, our American companies are unable to supply the demand, and during 1937 they were compelled to import 35 million pounds of rayon to fill their orders. According to reports, the manufacturers, even with increased production, are going to be hard pressed to supply the 1940 demand.

Although the trend in the consumption of rayon has been upward in the last 20 years, this does not mean that natural fibers such as cotton and wool have decreased. Rayon has been a supplement to these fibers rather than a substitute for them. The production of cotton goods has not decreased to any great extent since rayon has made its appearance on the textile market. In fact, the introduction of rayon into the cotton mills has saved many a mill from failing when the sale of cotton goods was poor or when the price didn’t warrant the cotton manufacturer’s selling his goods.

It is not uncommon today to find cotton mills spinning and weaving rayon with cotton. The use of rayon in this fashion hasn’t been harmful in the least to the mills but has introduced possibilities for making new fabrics. Rayon (staple) is very adaptable to cotton machinery and can be processed in the same manner as cotton with only a few small changes in the settings of the machines. The mills have been quick to see the advantage of using this new fiber in conjunction with cotton, and now one-half of all the textile mills in the U. S. A. weave rayon, very often in combination with other fibers. It is estimated that 3 additional cotton mills begin using rayon every month. Woollen mills, reluctant at first, have also become “rayon minded,” and they are now using a wool and rayon mix.

Germany, Japan, and other totalitarian states compel their textile manufacturers to weave a certain per centage of rayon into all the cloth that is produced. In America, however, rayon has climbed to its position as an important textile fiber the hard way, by strict competition, new styles, wear and price values. The women of this country constitute the majority of the rayon purchasers, and due to its rapid growth, it is quite evident that rayon has met with their approval.

The American producers do not take the attitude that rayon has reached a point of perfection, and they are continually striving to make a better fiber. Every large rayon corporation has chemists working to increase the elasticity, tensile strength, and other qualities of rayon. Each company vies with the others in perfecting a new and superior rayon. With the vast consumption of rayon today and the untiring efforts to make it even better, the future of this fiber, indeed, seems unlimited.

The National Rayon Weavers’ Association was chartered early in 1933.
Names In Stone

Names Not Only Engraved in Stone But in the Hearts of Mankind

By C. E. Anderson

The cornerstone of Clemson's new Textile Building was laid in the early Spring of 1938. A spirit of reverence and homage pervaded the ceremony, a spirit engendered by the contributions to civilization of four great men in the history of textiles. These men, Arkwright, Cartwright, Whitney and Perkins, left a permanent imprint on not only the textile industry but also on the welfare of mankind as a whole.

Today the Textile Building stands as a lasting symbol of progress and as an appropriate memorial to four men whose achievements made such progress possible. Their names, engraved in large granite blocks, surmount the different entrances to the building, occupying there a key position just as did their accomplishments in the growth of the textile industry.

The name of Edmund Cartwright appears over the west wing entrance which is appropriately shown on the cover piece. He was born in Nottinghamshire, England in the year 1743 and was graduated from Oxford College at the age of 21. His succeeding inventions were more numerous than profitable, their purpose being to increase production of woven fabrics by increasing the number of machines. To Edmund Cartwright we owe the inception of the power loom and, for this, we honor his name.

The entrance to the east wing bears the name of Sir Richard Arkwright who rose from the most humble environment to become a famous inventor, industrialist and finally to have the title of Knight conferred on him by King George. His education was of the most meager sort and his early profession was that of barber. Soon, however, his interests and efforts turned to the spinning process. This diversion of occupation bred another forward step in the textile industry, that of the spinning frame. For this invention the world does and always will honor Sir Richard Arkwright.

Also on the east wing is inscribed the name of Eli Whitney, born on a Connecticut farm and endowed with great mechanical ability which he exercised to defray expenses at Yale University. Upon his graduation in 1792, he was determined to teach school, but his aim was thwarted by a sudden interest in the problem of separating cotton fibers from the seed. After only several weeks the world witnessed the advent of Eli Whitney's cotton gin. This machine made possible a supply of raw material to meet production demands. For this achievement we do him honor.

A stone bearing the name of Sir William Henry Perkins is placed in the west wing of the building. This man, generally known as the father of the coal tar color industry, was born in 1838 and received his education in the City of London School and the Royal Academy of Chemistry. His ability was soon recognized by professors and he was encouraged in his research. While attempting to produce a synthetic quinine, he discovered a chemical compound which became known as aniline blue or mauve. This discovery has since been of vital importance to the textile industry by making its products attractive and more saleable. For this, we honor Sir William Henry Perkins.

Four names on four gray stones seem a small tribute to such great men, but every textile process from the raw material through the dye room revitalizes and enhances the memory of their deeds and instills more deeply within us the realization of our indebtedness to them.

Rayon filament yarn was first commercially producing 990 million pounds of rayon filament output of rayon yarn amounted to only 30,000 pounds. In 1938 there were twenty-two countries producing 990 million pounds of rayon filament yarn.
Nylon
More About the New Synthetic Fiber
By P. J. Burns

For many years research by highly trained chemists and engineers has been among the major activities of the Du Pont Company. This has resulted in new products, an improving of the quality of products, a lowering of production costs, and the simplification and standardization of operations. The most recent result of this research is the development of Nylon, a synthetic fiber.

Nylon is derived from air and water, coal, or other substances. As far as can be determined, the textile fiber made from Nylon is the first man-made organic fiber prepared wholly of raw materials from the mineral kingdom. Other textile fibers in general use, including wool, linen, silk, rayon, and cotton are derived from animal or vegetable materials.

Nylon is characterized by the extreme strength and toughness and the peculiar property to be formed into fibers and into various shapes, such as sheets and bristles.

There are many potential uses of nylon, but one of the most promising of these is in the manufacture of fine hosiery. Other likely uses for this material in yarn form are knit goods of different kinds, bathing suits, underwear, woven dress goods, bead cord, pile fabric, upholstery, and draperies. The nylon fiber is already being used in the manufacturing of sewing thread and fishing lines.

A heavy single-filament form is being produced for conversion into such diversified products as fishing leaders, brush bristles, and surgical sutures. Aside from the filament form, nylon in the flake form is extruded on copper wire for the purpose of insulation. Still other formations of nylon yet in the laboratory stage may soon become important contributions in the field of transparent sheetings, plastics, and finishes.

When extensive manufacturing is begun, nylon hosiery will be made by a number of the nationally known hosiery manufacturers. Present indications are that this hosiery will be on the market by the late spring or early summer of this year. One of the assets of nylon stockings is the holding of their shape. When properly fitted, these stockings will not stretch or bag in the knees. Due to the high degree of elasticity of the yarn, the hose retain their original shape after stretching. Experimentally, nylon fibers have demonstrated greater strength elasticity factors than any fibers now in use.

One of the largest uses of nylon at the present time is the bristles in Dr. West's "Miracle Tuft" toothbrush. These bristles are stronger and more elastic than pig bristles, more uniform in size, have a better color initially, hold their color longer, last longer, and absorb less water. Therefore, they do not become soft and flabby.

There has been little commercial production of any nylon products because of the lack of available nylon. In 1938 a pilot plant was put into operation to produce limited quantities of nylon for experimental purposes. Some of the yarn from this plant has been sent to manufacturers of hosiery interested in the possible commercial production of nylon hosiery, so that they may become familiarized with the nylon qualities.

A plant for the manufacturing of nylon was recently completed at Seaford, Delaware. The entire building is air-conditioned, and is extremely neat and in order. The building is a single-story rectangular structure, 1052 feet long and 272 feet wide. The manufacturing process begins at one end of the building. The following processes are carried out in "rooms" formed by walls running the width of the building. When this plant is in complete operation, about 850 workers will be employed to produce approximately four million pounds of nylon yarn a year.

These four million pounds of nylon yearly will not immediately take over the silk market which last year employed 45,000,000 pounds of silk, but if nylon consumption increases as rapidly as did rayon, the Japanese, from whom we buy four-fifths of our silk, have a reason for grave concern.

Du Pont announced in October that its new, first all-chemical yarn, will be known as "Nylon." A ten million dollar plant was contemplated at Seaford, Del., which will require at least twelve months to bring the new "Nylon" yarn into production.
Something About Our Faculty

Reports on Works and Research in Textiles by Professors

By C. M. Zeigler

H. H. Willis, Dean of Clemson Textile School, was reared at Clifton, S. C. He has had approximately nine years of practical experience in general textile work with Clifton Manufacturing Company at intervals prior to 1917. Shortly after graduation from Clemson College in 1917 he enlisted in the army for the duration of the war. He served as a private and sergeant at Fort Screven, Georgia, and in September, 1918, was commissioned a Second Lieutenant and sent to Edgewood Arsenal, Maryland, as property officer. He was later transferred to Camp Upton, New York, as paying officer during demobilization. He was honorably discharged in September, 1919, having served some twenty-six months.

After this service, he was with a bank in Spartanburg for a short time, resigning to accept an instructorship in the Clemson Textile School. He resigned this work in September, 1920, to accept a position as Assistant State Supervisor of Industrial Education in North Carolina. In 1921 he resigned this position to accept a position as Cotton Specialist with the U. S. Department of Agriculture, Bureau of Plant Industry.

He was connected with the U. S. Department of Agriculture from 1921 to 1930. During the first three years of his work with the Department of Agriculture, he spent considerable time in the Southwest (Texas, Arizona and New Mexico) in selecting certain varieties of cotton for spinning tests. Many of these varieties were tested at Clemson and in mills in the East. He made two surveys in Eastern mills with reference to the utilization of certain of these varieties of cotton.

In 1927 Mr. Willis was made dean of the Textile School at Clemson in addition to his duties as Cotton Specialist, in charge of the cooperative cotton spinning research work. He continued to act in these two capacities until July, 1930, at which time he resigned his government connection in order to devote full time to the Clemson Textile School.

Dean Willis is the author of some fourteen government bulletins. While on this spinning work he prepared some forty reports of spinning tests mainly for the information of the Cotton Division of the U. S. Department of Agriculture. He is also the author of some eighteen articles which have appeared in various textile magazines. He is the co-author of some seven books dealing with cotton yarn manufacturing. These books were prepared in cooperation with the Textile Foundation, Washington, D. C. On this work he was assisted by R. K. Eaton, Gaston Gage, W. G. Blair and G. H. Dunlap, members of the textile staff, and Miss Vernette B. Moore, specialist in educational methods.

It was through Mr. Willis’s untiring efforts that Clemson College succeeded in having constructed its spacious and up-to-date textile building which is equipped with very adequate laboratories and some of the newest machinery out. Much credit is due to him as a Pioneer in the Textile Industry and the building of the Clemson Textile School.

(Continued on page 20)
North and South American Cotton Production

By William R. O' Shields

The cotton-textile industry has migrated from Old England to New England, and from New England to the South, and today one of the most important questions in the South is, "Are we going to be able to keep our Southern Textile Industry in the United States or is it going to South America?"

The textile industry since its transformation from England to the United States has been one of the largest, most important, and most progressive of our American industries. Although the king of England placed severe restrictions upon the exportation of industrial machinery to the colonies, plans for the development of textile establishments and textile machinery were transferred mentally to the colonies. In addition to placing restrictions on exportations, he endeavored to prevent the immigration of skilled textile laborers, but in spite of his actions the steadily increasing number of immigrants, most of whom were skilled textile operatives, contributed greatly to the rapid progress of the textile industry in New England. The first industries which were established in the colonies were located in Philadelphia and Massachusetts.

Samuel Stater came to America in 1789, and through his genial and determined actions probably contributed more to the development of the textile industry in the colonies than any immigrant America has ever known. By his continual success in establishing industries in New York, Rhode Island, and Pawtucket River, he was appropriately named "Father of The American Manufacturers." The chief sources of power in his plants were steam engines and water power. Most of the mills were located on or near streams and waterfalls. The first power looms were developed by Francis Cabot in 1814 and as a result of this loom the first complete cotton factory in the world was erected at Waltham, Massachusetts.

British competition proved almost fatal to quite a number of promising industries, but they received legislative protection against competitive prices by a series of tariff acts which gave the textile industry in America a chance to expand. As a result of this rapid expansion, to a great extent the development of the railroads was influenced. The cotton grown in the Southern states was marketed in Liverpool, England, while most of the cotton used in the factories in the North was secured from the West Indies. The seemingly unlimited demand for manufactured products afforded rich markets for the cotton grown in the South. After the Civil War, large scale production was developed to a degree never before attained, and the United States steadily advanced to first rank among manufacturing nations.

In 1927 the textile industry ranked second among all the industries of the United States in capital invested, and second in value of products. The number of wage earners employed by the textile industry is exceeded by no other industries in the U. S. It leads all other industries in the number of industrial plants (26,483) and is second in the amount of motive power used. The reasons for the rapid widespread development in the South are the fact that the South's water power is unsurpassed anywhere in the North, and the development of mills near the source of raw material. Responsible for the Southward trend of the textile industry are the comparatively settled labor conditions and a better understanding and relationship between the employer and employee.

As a general rule the Southern mill operative is a fine, respectable, proud person, with high ideals and a great ambition. One of the greatest handicaps of the mill operative up until the present time has been the lack of education. Today our mill operatives are living on a much higher level. Compulsory school laws, and better and more efficient grammar and high schools, and to a very great extent, for our young men, the newly developed laboratories and textile schools, have trained our young men to be well-groomed citizens and leaders of tomorrow. Mill operatives have, nevertheless, the same characteristics that caused the people to rally after the end of the most devastating war history records, and without aid from the outside, build a new South—the industrial progress which history does not record.

"Cotton Production in the South"

Cotton is grown on about two million farms in the southern part of the United States. The crop requires hand work, and usually cotton pickers of all ages are in great demand for picking (Continued on page 16)
The Editors' Page

SCOPE OF OUR MAGAZINE

How long the idea of a textile magazine remained in the back of somebody's mind will probably never be known. At a recent meeting of the PHI PSI fraternity all members were snapped out of their lethargy by the statement that the chapter should consider publishing a magazine as an activity for this session. The announcement was received with enthusiasm. A committee was appointed to look into the possibilities and to render a report at the next meeting, relative to publishing the magazine. The committee returned a comprehensive report, and a staff was selected from the members of the club.

Christmas intervened, and it was not until after the holidays that work began in earnest. The purpose of the magazine was to deal with the independence of the textile school and the industry, and to maintain control with the textile school graduates. We hope that THE BOBBIN AND BEAKER will serve as a medium of written intercourse between the industry and students. Criticism and suggestions are invited. We desire to establish a department of "letters to the editor." Among the readers there are those who can write very informative and instructive articles. We offer our facilities for rendering such a service to our readers. One need only to submit his rough draft and the staff will prepare it in a form suitable for publishing, return it to the author for approval, and publish the article in the earliest issue.

THE BOBBIN AND BEAKER tries to cover all phases of the textile industry. That is a big task. As students we can write only on 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.

Due to the support received from business firms we are able to offer the magazine free of charge, despite the fact that it costs four and one-half cents to mail a copy. With an increased circulation it will probably be possible to obtain a cheaper postal rate. Any savings will be used in

(Continued on page 18)

WE ARE GRATEFUL

And as this, the first issue of our brain child, goes to press we wish to take a few minutes' time out to express our grateful appreciation to those who have made publication of THE BOBBIN AND BEAKER possible.

First, we appreciate the cooperation of Dean H. H. Willis of the Clemson Textile School, and of the Clemson College Business Manager and his staff who have lent valuable financial and practical advice and aid. To Professor R. K. Eaton, head of Carding and spinning at Clemson we owe a debt for valuable advice and help. We appreciate the guest editorial of Dr. William P. Jacobs, President of Presbyterian College (one of the numerous important offices that he holds) and the articles that our friends have written, as well as the information and valuable assistance they have rendered.

To our advertisers we say "Thank You!" We hope that our services will prove as valuable to you as yours are to us. THE CLEMSON TIGER, AGRARIAN, and TAPS, already well-founded publications of Clemson, have also helped in many, many ways, and the staffs of these periodicals have been ever-willing to render any assistance possible.

Thanks, too, to the Clemson Textile Students who have done the actual work on the magazine.

And last but not least, we wish to thank the Observer Printing Company, of Greenville, for their part in helping to found the first college magazine in the South.

THE BOBBIN AND BEAKER, in its swaddling clothes, greets its friends and says, "Thank you again."—C. E. A.

DISTRIBUTION

Of the three thousand copies of THE BOBBIN AND BEAKER printed, two thousand copies will find their way into textile plants of North and South Carolina, and the remaining thousand will be distributed to students, alumni and friends. The address to which this copy has been sent is on our permanent mailing list. If the address should be changed, extra copies desired, or a new member wishes to be added to the mailing list, we will be glad to oblige.—E. R. R.
Short Features

Clemson Textile School

By D. J. Ross

Clemson Textile School moved into its new plant in September, 1938. This new building cost approximately $475,000, and has 127,000 square feet of space.

Clemson, having 335 students, has the largest four-year day enrollment of the ten textile schools in the U. S.

According to the records of this office the textile students are located in states per the attached. No doubt many of those in the column marked "Doubtful" are in textiles or allied industries.

During the past ten years approximately 95 per cent of the textile graduates have gone into textiles or allied work such as teaching textiles, textile sales, etc.

The enrollment has grown from some four or five students in 1898 to a present enrollment of 335. In addition to this number, we have about ten students taking special textile work, making a total of 345 students.

The demand for Clemson textile graduates has been very high for the past ten years. After placing all of our graduates who wished a job, we have had each of these ten years many additional calls for men which we were unable to fill.

<table>
<thead>
<tr>
<th>Location</th>
<th>In Textiles</th>
<th>Clemson Textile Men</th>
<th>Non-Textile</th>
<th>Doubtful</th>
<th>Total</th>
</tr>
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<tr>
<td>Alabama</td>
<td>14</td>
<td>1</td>
<td>5</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>California</td>
<td>1</td>
<td>1</td>
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<td></td>
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<td>2</td>
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<td>Florida</td>
<td>4</td>
<td>2</td>
<td>6</td>
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<td></td>
</tr>
<tr>
<td>Georgia</td>
<td>65</td>
<td>3</td>
<td>14</td>
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<td>Illinois</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td></td>
</tr>
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<td>Japan</td>
<td></td>
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<td>1</td>
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<td>3</td>
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<td>1</td>
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<tr>
<td>South Carolina</td>
<td>291</td>
<td>85</td>
<td>177</td>
<td>553</td>
<td></td>
</tr>
</tbody>
</table>

37th Annual Phi Psi Convention and Textile Exhibit

For three days, April 11, 12, 13, Phi Psi alumni and members will convene in Philadelphia, Pa., at the Bellevue-Stratford Hotel. These annual conventions have always been a moving force that has bound the brothers closer together, diffusing the fraternal fellowship among the many scattered chapters.

The usual business meetings and social engagements are to be accompanied with tours of historical Philadelphia and displays of textile exhibits sponsored by chapters and members. Not the least of these displays will be THE BOBBIN AND BEAKER sponsored by the Iota chapter of Clemson College.

All Phi Psi members are urged by the grand council to send in their registration cards as early as possible. Any information desired concerning registration, accommodations, displays or exhibits, or other phases of the convention may be obtained from one of the following committee chairmen, all of whom are in Philadelphia:

Ways and Means: J. E. Fite, Jr. 1952 E. Allegheny Avenue. Chapter Contact: Chas. W. Neeld, Jr., 134 Chestnut Street.

Alpha Chapter: Thomas Gold, Gladstone Apartments, 11th and Pine Streets.

Exhibits: Benj. K. Archer, 123 S. 2nd Street.

Publicity: Theo. B. Hayward, 400 Chestnut Street.

Entertainment and Program: Elmer T. Lewis, 246 W. Upsal Street.

Registration and Finance: DeHaven Butterworth, York and Cedar Streets.

Reception: Percival Theel, Philadelphia Textile School, Broad and Pine Streets.

Brothers, the Mecca is Philadelphia on April 11, 12, 13, all roads will lead there.—E. R. R.

Tennessee          9 1 10
Texas              5 1 6
Virginia           12 3 15
Washington, D. C.  3 1 4
Total              540 117 221 878
Per cent           61.503 13.325 25.170 99.998
ARIFICIAL FIBERS IN THE SPOTLIGHT

(Continued from page 5)

rayons. Its softness and drapability instantly won it to women's dress wear. Not being highly absorberent, stains are more easily removed in cleaning. Cross dye effects and crepes with rayons insure acetate its place among the other rayons.

Each type of rayon has its distinct properties and peculiarities that must be dealt with throughout the processing from the producer to the ultimate consumer. Lanital, Vinyon and Nylon will present problems that haven't been tackled yet. The latter is peculiar in that its wet breaking strength is about three times greater than cuprammonium which possesses the highest wet strength of the rayons. The density of nylon may be varied without a change of filament size. The first nylon was so hard that it wore away the spinning needles in knitting hosiery. New fibers are received today by an eager, inquisitive public. Such was not always the case.

The first rayon fabrics were not what they are today. Colors were not always fast. The fact that rayon is much weaker wet than dry, and the fact that its largest consumption product has been in women's dress wear, which are often home laundered has been a draw back. Before research in the dry cleaning industry, rayon fabrics were affected by certain solutions. Nowadays, any reputable cleaner can handle the best rayon fabrics without the danger of injuring them. Acetate should be cleaned with caution. Cleaning solutions containing acetone, chloroform, or ether will tender acetate rayon and should never be used on it. In the home laundering of rayons, they should be washed with a mild soap in warm sudsy water. The goods should be rubbed lightly and never scrubbed vigorously, bearing in mind that rayons are weakest when wet. Never wring out the goods. Squeeze them to remove excess moisture, wrapping them in a dry towel will facilitate drying. Do not place the garment in direct sun light to dry. If the material is knitted, dry flat on a towel, pinning it into shape. An electric iron that is too hot will injure rayon. Use a warm iron or iron the goods under a cloth. Cuprammonium rayon will stand about the same heat that may be applied to cotton. The other rayons are more sensitive to heat, acetate being affected most.

Of recent years, rayon staple fiber has become popular as woven fabrics. Any type of rayon may be cut into various staple lengths and processed by the same machinery that handles cotton or wool. Rayon staple consumption has steadily risen since 1929 when the U. S. consumption of rayon staple fiber was only 500,000 pounds, until 1938 when 29,833,000 pounds of U. S. produced staple were processed. In 1938, a total of 43,500,000 pounds were processed in the U. S. That year, the U. S. was fifth in the production of rayon staple fiber with 29,860,000 pounds. Japan was the largest producer, manufacturing 375,000,000 pounds, followed by Germany, Italy, Great Britain, and the U. S., respectively. In 1938 the cotton industry consumed 90 per cent of the staple fiber processed in the U. S. The woollen and worsted industries consumed the other 10 per cent. Rayon staple offers to the cotton mill manufacturer a new and different product which he may produce with only minor changes in his existing cotton manufacturing machinery. Rayon continuous filament has constituted only a small part of mens' clothing, but rayon staple has introduced an innovation in that industry. The wool blended twill in slacks and polo shirts is especially popular in mens' wear. Light weight summer suits are being made partially or wholly of rayon staple. "Congo" cloth is made of spun rayon and filament twisted together. These garments are cool, crease resistant, color-fast, perspiration proof, and light in weight. Women are large consumers of spun rayon made into beach pajamas, swim suits, jackets, and skirts, and other summer fabrics. The consumption of rayon staple is overhauling filament yarn. World consumption was almost equal for the two yarns in 1938. The cost of rayon staple based on 1 inch staple has steadily decreased from $0.60 per pound in 1928 to $0.25 per pound in 1937. The 1937 price was one half of the 1931 price. The dull viscose staple is usually two cents per pound more than bright viscose staple.

Of the other non-cellulose fibers, the most notable are Nylon, Lanital, and Vinyon. For the former the Du Ponts have just spent $11,000,000 on plants that can turn out about 4,600,000 pounds of Nylon a year, almost all of which will be made into yarn. As yarn, nylon will be for the greater part made into women's hose. As hose it is claimed that nylon will outwear silk, make possible greater sheerness, and undersell silk 15 per cent. Nylon hosiery yarn for knitting will sell for $0.25 to $4.55 per pound. Raw silk for the same purpose sells for $3.75 to $5.00 per pound. Last year 45,000,000 pounds of Japanese silk were used in making hosiery. With the war both in Europe and Asia making the supply indefinite and prices high,
never could a more timely entry into the silk industry be made than now.

A potent competition of the woolen industry appears to be "Lanital." However this product at present is confined to Italy. Its introduction in this country would not be as a competitor of silk, but as an outlet for a product which is in great abundance in the U.S. This product is casein. At present, only a small portion of the available casein is consumed. This product is obtained from milk and used as a binder or plastic.

The problem in Italy has been the collection of the milk and this is one of the most expensive factors of the raw material. The price has risen from 2 lire per kilogram to 10 lire per kilogram. A lowering of the price of raw wool in the international market makes the price of milk relatively higher. A new factory is under construction in Italy that will be capable of increasing the production of "Lanital" by 25,000 kilograms (55,000 pounds) daily. Japan has secured the Ferretti patent for the manufacture of Lanital. The Union of South Africa has sent investigators to Italy to study the new fiber both as a competitor of raw wool and as a consumer of milk, of which that country has a large enough store to bid for a world market.

The Carbide and Carbon Chemical Corporation have perfected a raw textile fiber called "Vinyon." The fiber is one of several separate and distinct types of vinyl polymerization products which this company has developed since 1927. The fiber is made by a modification of the "dry spinning" modification from a white fluffy powder which is a special grade of "Vinylite" synthetic resin. The American Viscose Corporation is manufacturing Vinyon for commercial production.

The tensile strength may be made to vary from 1.0 to 4.0 grams per denier. Its wet and dry breaking strength are about the same. The fiber may be delustered, and its elasticity ranks with that of silk. The fiber is resistant to acids and alkalis. This fact adapts it excellently as an industrial filter fabric. Both in the continuous filament and staple fiber, Vinyon is expected to be knitted or woven into long wearing garments such as full fashioned hosiery, bathing suits, chemical workers' clothing, raincoating, umbrella fabrics, and tent and awning material.

Lanital, Nylon, and Vinyon besides having properties different from rayon are unique in that they are a strict departure from a fiber of a cell.
NORTH AND SOUTH AMERICAN COTTON PRODUCTION
(Continued from page 11)
from August through November. The crop on an average is about 13 million bales each weighing 500 pounds. About one-half of our cotton crop is used in our own mills. The remainder is exported, chiefly to Japan, Great Britain, and the continent of Europe.

There are about 13,000 gins in this country operating through a season of two to six months. About 330 compress plants are distributed through the cotton belt. Most of our 1200 domestic cotton mills that manufacture raw cotton into yarn and cloth are located in the cotton growing States. Massachusetts leads the non-cotton-growing States in manufacturing cotton.

In 1915 the Southern mills processed 53.1 per cent of all the cotton consumed in the United States, while the New England mills processed 36.5 per cent. In 1920 the number of workers engaged in textile industries in the United States numbered 1,383,805. In 1927 Massachusetts led in the percentage of distribution of spinning spindles, followed by North Carolina, South Carolina, and Rhode Island. Of the 151,745,000 spindles of the world, 18.6 per cent are located in South Carolina, 30.1 per cent of which are located in a radius of 30 miles of Clemson College. According to the census of manufactures in 1933, wage earners in Textile plants in North Carolina totaled 89,416, in South Carolina 75,718, and in Georgia 58,383.

"Cotton Production in Brazil"

To give one some idea as to the size of Brazil, its area is larger than the territory occupied by the continental United States. Only 31,067,000 acres, or 1.5 per cent of the total 3,286,770 square miles are cultivated. Approximately 50 per cent of the total acres are covered by forest. The area in Brazil which is suited for cotton growing is equal approximately to the combined area of Oklahoma and Texas. The population is approximately 45 million people, as compared to that of the chief cotton producing states of the United States which is 25.5 million. Therefore, the two great facts which must be seriously considered in any discussion of Brazil’s cotton growing and manufacturing possibilities are population and area. Another important and chief limiting factor, until the present, has been an inadequate supply of intelligent labor, but through the introduction of modern machinery and the influx, to some extent, of capital and immigration, the labor problem has been solved temporarily. The chief reason why Brazil’s cotton production has expanded is because coffee prices have been greatly depressed while Brazilian cotton has found a ready market, therefore, its production is likely to increase as long as its cotton market remains or increases in magnitude.

There are two distinct cotton regions in Brazil, the most important one is in Southern Brazil and the second most important area is in Northeastern Brazil. The dates of planting and harvesting in these two regions differ. In Southern Brazil the planting period is from September through November and the harvesting takes place from February through May, whereas in Northeastern Brazil the planting period is from February through April and the harvest is September and November.

With regard to the 1937-38 season, 707,595 bales were produced in the Northern District, while 1,267,172 bales were produced in the Southern District. The 1938-39 crop was somewhat smaller than the ’37 crop, in that 650,772 bales were produced in the North-eastern district.

Brazilian cotton today is not the same as Brazilian cotton of a few years ago. A large American cotton company is building modern gins and making trade agreements in Sao Paulo. The Brazilian cotton this year is one-half cent less in price for the same types as domestic staple and is well up to 1-1-8 inch in length. It compares favorably in grade and character with American cotton, and this is one of the many reasons why Brazil’s cotton market is rapidly expanding.

The Brazilian Cotton Textile Industry

Other than fine counts which it does not as yet produce, Brazil for some considerable time has been self supporting in textiles, particularly cotton cloths. Most of the mills have been working overtime to the extent of two and three shifts of eight hours, and have been building up large stocks or overproducing to a large extent. Many manufacturers have tried to find suitable outlets for their excess production in foreign markets, but trying to meet the price of dumped cloth of other countries in foreign markets has not shown profitable results. “According to decree promulgated in Brazil on April 3, 1939, the installation of new machinery for the purpose of producing commercially synthetic materials to substitute agricultural and animal commodities such as wool, rubber, silk, and cotton is prohibited.”

Brazil is the principal cotton consuming country in South America. Cotton consumption in Brazil, practically all of which is Brazilian cotton, and
the number of spinning spindles is shown in the table below.

<table>
<thead>
<tr>
<th>Season</th>
<th>Number of Running Bales</th>
<th>July 1st Spinning Spindles in Brazil</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aug. 1-July 1</td>
<td>399,000</td>
<td>2,690,000</td>
</tr>
<tr>
<td>1930-31</td>
<td>367,000</td>
<td>2,690,000</td>
</tr>
<tr>
<td>1931-32</td>
<td>357,000</td>
<td>2,765,000</td>
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<tr>
<td>1932-33</td>
<td>420,000</td>
<td>2,765,000</td>
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<tr>
<td>1933-34</td>
<td>558,000</td>
<td>2,700,000</td>
</tr>
<tr>
<td>1934-35</td>
<td>657,000</td>
<td>2,712,000</td>
</tr>
<tr>
<td>1935-36</td>
<td>699,000</td>
<td>2,714,000</td>
</tr>
<tr>
<td>1936-37</td>
<td>828,000</td>
<td>2,725,000</td>
</tr>
<tr>
<td>1937-38</td>
<td>619,000</td>
<td>2,750,000</td>
</tr>
</tbody>
</table>

Today the manufactures of cotton textiles ranks first among Brazil's manufacturing industries. It has long been an important industry, for as early as in 1886 Brazil had nine textile mills with 385 looms and 14,875 spindles, employing 766 workmen. Within the next nineteen years (1905) Brazil had 110 mills, with approximately 39,000 workers. The industry has enjoyed a very rapid growth since the early 1900's and in 1920 Brazil had 569 plants, with 126,171 looms and 2,968,175 spindles giving employment to 118,809 workmen.

From this discussion you can readily see that the United States has over nine times as many spinning spindles as Brazil, Brazil has had a very hard time trying to compete with the prices fixed by the leading cotton manufacturing countries. Brazil's cotton production and manufacturing is likely to increase as long as the market remains or increases in magnitude.

The table below will give an indication of how the U. S. ranks among the leading cotton manufacturing countries of the world. One will readily see that the United States ranks second only to the United Kingdom and has about three times as many cotton spinning spindles as the third largest cotton manufacturing country which is Germany. Comparing the cotton spinning spindles in Brazil, we find that the number of spinning spindles in the United States is nine times as many as those of Brazil.

<table>
<thead>
<tr>
<th>Country</th>
<th>Cotton consumption of Amer. cotton</th>
<th>Spinning Spindles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Great Britain</td>
<td>538,000</td>
<td>36,322,000</td>
</tr>
<tr>
<td>United States</td>
<td>3,332,000</td>
<td>25,911,000</td>
</tr>
<tr>
<td>Germany</td>
<td>179,000</td>
<td>12,967,000</td>
</tr>
<tr>
<td>Japan</td>
<td>390,000</td>
<td>11,502,000</td>
</tr>
<tr>
<td>Russia</td>
<td>1,350,000</td>
<td>10,250,000</td>
</tr>
<tr>
<td>India</td>
<td>54,000</td>
<td>10,054,000</td>
</tr>
<tr>
<td>France</td>
<td>294,000</td>
<td>9,794,000</td>
</tr>
<tr>
<td>Italy</td>
<td>188,000</td>
<td>5,524,000</td>
</tr>
<tr>
<td>China</td>
<td>31,000</td>
<td>4,450,000</td>
</tr>
</tbody>
</table>

Brazil        365,000     2,765,000
Canada        120,000     1,159,000
Mexico        86,000      889,000

*Sundries.

A FUTURE IN TEXTILES

(Continued from page 3)

...ing. We need more plants for manufacturing wearing apparel, household utilities, and various other cotton and rayon textile products to widen the market for the mills of the South.

If you are a textile student; if you are looking for a brighter future my advice to you is learn the essentials of textile selling, merchandising and marketing, the essentials of textile fabricating along with the fundamentals of weaving and spinning.

The opportunities in South Carolina are as brilliant as anywhere else in the world. The horizons in South Carolina are just as wide as the world itself. All that is required is personal ambition, individual initiative and the determination to succeed.

RALPH E. LOPER CO.
Specialists in
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INDUSTRIAL ENGINEERS

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Buffington Building — Phone 6010
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COLUMBIA, S. C.

L. C. Smith, Agent
GRADES VS. PERSONALITY

By Wade Carter

It has long been a question for the student as to which he will be most benefited by, obtaining high grades or developing his personality. There is no doubt that a good personality is most desirable, but when a student neglects his studies in developing what he hopes to be a dynamic personality, then it should be made known to him that a good personality is not the only desirable quality that one should have. Then too when one spends all of his time studying in order to obtain high grades and fails to observe what is going on around him and does not obtain a better understanding of human nature, he will be sadly lacking when he gets out into this world of affairs. Such statements as the following are not uncommon: "John Doe makes excellent grades, yes, but he has no common sense. His mind is as narrow as his vision from his eyes to a book," or "Bill Jones is one of the finest fellows I have ever known, and he seems to be very intelligent, but I cannot understand why he doesn't make better grades."

Upon being asked which he thought was more important, grades or personality, a Clemson alumnus with twelve years experience in a rayon mill stated: "There are probably a lot of good arguments for both sides. However, I think that grades in themselves, though they may get you a job without an interview, are only a matter for record and mean absolutely nothing unless you really know your subject. Personality is of major importance when you are being interviewed for a position, but it will never hold that position unless you know your subject. You will find out that one learns more about textiles during the first six months on the job than he did in four years at college, but do not forget that one needs a college education to get the job that will enable him to really learn the work. It has been said, 'It isn't what you know but who you know that counts,' but personally I think some of both is necessary."

It is evident that one should strive to obtain a good general knowledge of his subject and to develop his personality at the same time, and in so doing, one will have less trouble in coping with the problems he will have to face in the future.

SCOPE OF OUR MAGAZINE

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improving the magazine. All financial transactions are handled through the Clemson College Business Manager.

To advertisers our circulation offers a broad field. Not only does the magazine offer the advertiser a personal contact with the industry, but young men who will wield an influence in the near future are also made aware of their services.

Though the magazine was originated by and through the efforts of PHI PSI, and its staff is now composed only of PHI PSI members, the succeeding officers will be chosen from the entire textile school. If the students and the industry receive THE BOBBIN AND BEAKER as sincerely as have our patrons, the advertisers, our success is assured.

TO OLD GRADUATES

Due to the fact that we do not have a paid subscription list, we have been unable to secure a second-class mailing permit. By offering a subscription rate, we will be able to mail the magazine at a much lower cost.

Fill in the blank below and return at once.

The future depends on the reception from the textile alumni and the textile industry.

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even get started. Pull can get you a job, but it can't keep it for you. In some businesses pull is almost necessary to get a job, in others it is not quite so important. Be careful of the job you take. A job which pays the most at the start may not be the best job. There may not be a chance for any advancement. If necessary take a job that may pay less than another job you might have if it has more promise for advancement. Getting a job is not the hardest part. Holding it is where the real test comes. No matter what kind of job you have, make it as important as any job in the business. Make yourself indispensable. Do a little more than just enough to get by. You have a product to sell—yourself, just as a butcher has a product, a lawyer or a doctor. Make your own services the best product available and there will be a big demand for it. Advancement cannot be achieved by pulling down those above you or stepping on those below. Advancing in the business world is comparable to climbing a ladder. The only way you can move upward is by pushing up those above you and those below you will move up as you do.

There is no one formula for success. Hard work is one sure means that has been practiced for ages. Keep your eyes open for any opportunities that may present themselves. If you really think you have an idea that will be helpful don't hesitate to present it. At the same time don't be a smart alec just because you have a college degree. Knowing how to listen is as important as knowing how to talk in many instances. At times it may seem that there are no chances of making a success out of textiles as a career. Other pastures may appear greener than your own at times but they really aren't. If you work hard and keep your eyes open there is a place for you somewhere if you'll stick long enough to find it.

The introduction of synthetic fibers into the field of textiles is opening up practically a new field. The fibers themselves are new. There aren't many men experienced in handling them. The manufacture of these fibers and converting them into cloth is going to require trained men, men who know what they are doing. The dyeing and

finishing of materials made from these new fibers is going to require men who are trained for this specific purpose. College men are the ones who can and will fulfill this need. The use of the fibers is in its infancy. Its possibilities are limitless and so are the opportunities for those connected with it. The opportunities for the college trained man are greater now than at anytime and there is every chance of a successful career in the field of textiles.
SOMETHING ABOUT OUR FACULTY

(Continued from page 10)

R. K. Eaton,
Professor of Carding and Spinning

Mr. Eaton attended Bowdoin College, Brunswick, Maine, receiving his A.B. degree in 1905. The following year he took up the study of Textile Chemistry and Textile Designing at the Philadelphia Textile School.

After completing these courses in the study of textiles, Mr. Eaton joined the firm of The Whitin Machine Works and for the next three years was employed in erecting cards and spinning frames. From 1909 to 1910 he was associated with the Whitin Experimental Waste Plant, Ashburnham, Mass.

Desiring to enter into another field, Mr. Eaton accepted a position as assistant to Agent in charge of cloth contracts with Cabot Manufacturing Company of Brunswick, Maine. This position he held until 1917 when he was to take part in the war as a first lieutenant in the Chemical Warfare Service until 1919. He then went back to take charge of cloth contracts on novelties and curtain materials with the Cabot Manufacturing Co. up to the year 1921.

Due to failing health, Mr. Eaton came south to live in 1923. It was then that he was made professor of weaving and designing at Clemson College, later being transferred to head of Carding and Spinning Department. This position he still holds.

It is indeed a great fortune to Clemson College to have such a man as Mr. Eaton in its Textile School. His sound judgment and varied knowledge has been recognized by his many students and college officials as a great contribution to the up-building of one of the most recognized textile schools of the nation.

Joseph Lindsay, Jr.
Professor of Textile Chemistry and Dyeing

Mr. Lindsay first received his A.B. degree from Erskine College in 1919, continuing his studies at the University of North Carolina during the year 1923. The year following he took up graduate study at the University of Chicago which was to be followed by a summer course at the Massachusetts Institute of Technology. After this varied field of education, Mr. Lindsay rounded out his study of Textiles at the Philadelphia Textile school.

Being well fitted to set out in a high standing field, Mr. Lindsay accepted the position as Technical Representative for the General Dyestuff Corporation, Charlotte, North Carolina, in the year 1925. This position he held nine years.

Wide experience and a varied knowledge of the chemistry field in the Textile Industry, prepared him to be the head of Textile Chemistry and Dyeing at Clemson College in 1934, and he is rendering his capable services in this capacity now.

A. E. McKenna,
Head of Weaving and Designing Department

Mr. McKenna graduated from the Rhode Island School of Design in 1932 and later attended the Bradford Durfee Textile School evening course in spooling, warping, and slashing.

He spent 5 years employment with the Mount Hope Spinning Company of Warren, Rhode Island, as head of the card room and later the weave room.

He came south to increase his knowledge of textiles, receiving his B.S. degree from Clemson College in 1930. In 1933 he received a M.S. degree from the University of Tennessee.

Mr. McKenna’s highly esteemed knowledge in weaving and designing has justified a number of articles published in the Melland Textile Monthly on such subjects as leno, jacquard design, and dobby design.

It can be said with all sincerity that through his efforts the Clemson College Textile Weaving and Designing Department has become outstanding.

ARTIFICIAL FIBERS IN THE SPOTLIGHT

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lulose base or compound. It would appear that the trend is not only new and different properties of the existing man-made fibers, but new and different fibers for the individuals’ adornment.
IMPORTANCE OF THE CLEMSON TEXTILE SCHOOL

(Continued from page 15)

of graduation it would take us 100 years to fill all these jobs.

We see our graduates rise, not gradually, but by tremendous jumps. What greater incentive can a school have than that?

There is no group of textile school graduates in this country that is equaling the accomplishments of Clemson men. Not only are they beginning to show the way in manufacturing, but they are leading the scientific research in the use of cotton. The Department of Agriculture research division is manned almost entirely by Clemson graduates. Many a boy who never saw a cotton mill before coming to Clemson is now well established and competent to rise to the top.

Clemson Textile School will increase in importance in South Carolina because we are preparing young men to enter an enormous industry, where there are hundreds of jobs and unlimited opportunities for advancement. Our graduates will be prepared to use advanced methods which are beginning to be recognized by manufacturers.

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