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The Cover: A microscopic cross-sectional view of an Orlon fiber ... Ted Pappas '57

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South Carolina Points
The Way in
Re-Emphasizing the
Importance of
Textile Education

R. C. Edwards
Vice President for Development, Clemson College

On November 13, I had the pleasure of meeting with the Education Committee of the American Cotton Manufacturers’ Institute and the National Council for Textile Education during the semi-annual meeting of the latter group which was held at the Sedgefield Inn in Greensboro, North Carolina, on November 12, 13, and 14.

It was very refreshing to observe these two groups representing widely differing segments of the textile industry deliberating with such earnestness about a problem which vitally affects every segment of the textile industry.

At a time when the demand for increasing numbers of better trained men is of paramount importance, the enrollment in the textile schools of the United States has been declining at an alarming rate. The fact that the textile industry is becoming increasingly aware of this problem and of the part it must play in meeting the needs, was clearly reflected in the thoughts and actions of the Education Committee of A.C.M.I.

Mr. Julian H. Robinson, of the North Carolina Finishing Company, Salisbury, speaking as Chairman of the Committee, pledged a close relationship in the future of the textile industry with the Council. Mr. Robinson outlined the main objectives of his committee as (1) closer relationship with the textile schools and (2) a program that will make full use of college trained personnel by A.C.M.I. member mills. The Education Committee plans to make a survey within the textile industry and among the textile schools to determine what steps are necessary in meeting the problem of college trained man power.
Deans of the college textile schools, including Dr. H. M. Brown, of Clemson College, envisioned the move as the most significant boost for textile education in recent years. In effect, joint action of the two groups reflects complete endorsement of the far-sighted educational and public relations programs initiated jointly by Clemson College and the South Carolina Textile Manufacturers’ Association early this fall.

In speaking to these groups, the writer emphasized the fact that problems facing the textile industry today are insignificant when compared to the problems of the future unless positive action is taken now. Freshmen enrolling in September, 1957, will not graduate before June, 1961. Therefore, at least an additional four to five years of continuing reduced graduates is inevitable.

The public must develop a better appreciation of the textile industry. This job, of necessity, is mainly an industry responsibility. The fact that recent surveys indicate that an anti-textile career attitude is prevalent among textile families has made it necessary, in many instances, for textile students to be recruited from non-textile areas.

The program inaugurated at Clemson College is designed to provide graduates to take advantage of the estimated 4,500 job opportunities which will be available in the textile industry of South Carolina during the next ten years.

As a part of this program, the high school guidance counselors throughout the state were invited to Clemson for a two-day workshop on November 30-December 1. While the group was on the campus, particular emphasis was placed on the challenging opportunities offered by the textile industry. Mr. F. E. Grier, President of A.C.M.I. and of Abney Mills, delivered the principle address at the Friday night banquet.

The approach we envision as being necessary to meet the needs includes the development of a positive public relations program that will (1) sell the public generally, and the high school student at the grass-roots level specifically; (2) attract students with high academic potential and outstanding leadership qualities; (3) create a clearer understanding between industry and the Clemson School of Textiles, a definition of the roles of each; and (4) a review of the type of training given in the Clemson Textile School.

As a means of helping to attract the really outstanding high school students, we have requested the textile industry of South Carolina to provide funds for additional academic scholarships, particularly for freshmen.

Four measures have been outlined for the streamlining of textile training at the college level. They are (1) a greater emphasis on the scientific approach to textile manufacturing processes; (2) greater emphasis upon the study of English, mathematics, and the humanities; (3) addition of a lecture series dealing with those subjects which cannot be taught satisfactorily in the textile curriculum; and (4) development of a positive summer employment program that will provide practical manufacturing experience under mill conditions.

Since there is a limit to what can be taught in theory, the summer training program is designed to give students a view of the industry unattainable by any other method. This summer training would become a vital part of the students’ educational program, materially increasing his value to the organization hiring him upon graduation.

The summer training program would, in addition to providing the student an opportunity to operate machines under mill conditions, give the student an opportunity to learn the full significance of the importance of big production efficiency, good quality, low unit cost, and to achieve an understanding of the basic factors which contribute to each. Time would be devoted to giving the student an opportunity to learn the importance of good management in the successful operation of a textile plant and the many factors which contribute to successful management.

At the end of each summer vacation period, a written report covering the student’s activities would be prepared by the mills involved and forwarded to Clemson College to become a part of the permanent record of the student. This program also will afford an excellent opportunity for faculty members of the textile school to visit the mills of the state in follow-up on the progress of their students.

The lecture series phase this of program is not new to the industry. Use of workshops and orientation seminars is being widely expanded. If men with years of experience can benefit from this approach to better education, then certainly the textile education program can be greatly enhanced through this approach.

Lectures would deal with such subjects as merchandising, labor relations, workman’s compensation, and unemployment compensation insurance, technical advancements in machines, processes, raw materials, etc., and in such management areas as cost accounting, industrial engineering, inventory control, production planning, etc. In setting up such a program, industry support is of primary importance be-

(Continued on page 24)
Informal Organization: Fact, Not Fiction

Frank A. Burtner
Associate Professor of Sociology

In recent years a great deal of research has been undertaken in the field of human relations in industry. Part of the research has been centered in the universities and colleges — Harvard, M. I. T., Yale, Cornell, Michigan, to mention only a few, and part has been undertaken by industry itself — General Motors, General Electric, Goodyear, Bell Telephone, and many others. The Armed Forces constitute still another group which has shown increasing interest in this field; in fact, the Armed Forces redoubled their investigations as a result of findings during and since World War II. Some of these research findings have confirmed things which we knew, while some have raised questions concerning our past and present practices.

This new knowledge transforms the question, "What makes the worker more productive?", into the question, "What makes the worker more willing?". In other words, from the great mass of research has come a new orientation, a new point of view concerning the nature of work and the nature of the worker. Work is seen as a GROUP ACTIVITY rather than an individual effort, and the worker is viewed as a person whose attitudes and work effectiveness are conditioned by social demands from both inside and outside the work plant. And in this connection, no distinction is made between the front office and the plant. On the contrary, the group nature of work involves all those from the plant manager to the sweeper, from the president to the janitor. The basic problem of human relations in industry becomes then, to mold the group into an effective team; to bring about that sort of organization which will satisfy both the wants of management and the wants of workers.

Despite evidence to the contrary, many businessmen continue to conceive of teamwork as an "intangible" and define it in terms of production and profit. This conception stems quite naturally from the rather simple picture of work life generally held by administrators. The objective of life is "success," that is, the maximization of production and profit. The ingredients of success are improved equipment, trained personnel, and good organization. If success is not forthcoming, one of these ingredients is lacking. The remedy in any case is simple and obvious. Get new equipment, get better trained personnel, and undergo a thorough reorganization.

But even when the prescription is concocted by experts and followed carefully, the desired objective is not always attained. For example, many plants with outmoded machinery, untrained personnel, and haphazard organization succeed while other plants with modern equipment, highly trained personnel, and model organizational schemes sometimes fail. During World War II, some of the new defense plants which had the best equipment, personnel, and administrative organization had poor production records. What is more startling, people often preferred to work in antiquated, blighted plants, and many instances can be cited of industrial strife occurring in plants which were considered the epitome of technical and organizational planning.
But to the executive, the logic of efficiency dictates that such problems as described above be dealt with in terms of formal, that is, blueprint, organization, and so studies are made of supervision, wage rates, and incentive schemes. Perhaps too much thought has been given to this kind of organization in the plant, including informal organization.

By informal organization is meant that network of personal and social relations which as not defined or prescribed by formal organization. It may be thought of as including every aspect of social life that is not anticipated by technological and formal relations. The structure of informal organization is rather complex, made up of interrelated items such as gangs, friendships, and cliques; an organization and structure which defines the relations between these groups; customs and codes of conduct for group members, including codes which regulate activities within the group as well as activities towards other groups; ideas, beliefs, and values; informal group activities such as ceremonies, rites, recreation, joking; and communication systems which inform members of occurrences vital to group solidarity and action. Above all, informal organization is spontaneous and arises wherever and when people interact within a work situation.

Informal organization has frequently gone unrecognized, largely because it is invisible to the untrained observer. When an organization is running smoothly, it is generally assumed that the formal organization is in control and adequate for the tasks at hand. That is, it is assumed that the organization chart, the job descriptions, the wage and salary scale, and a statement of company policies, which, taken together, constitute a set of blueprints of the formal organization of the plant, are all that is necessary to the attainment of company goals. However, unusual things happen in work places which cannot be explained by analysis of the formal organization alone. Some of these "unexplainable" events would include such situations as the following: absenteeism rises without apparent cause; a rash of stealing and destructiveness; a brawl occurs during an executive conference between two groups which had shown no evidence of antagonism in previous meetings; one department excels another comparable department in production, earnings, and performance without apparent cause; a group plans and executes a number of social functions whereas another never engages in social affairs; a rumor sweeps through a plant. To the untrained observer, these events are likely to be regarded as irregularities and explained in terms of the personalities involved. To the trained observer, however, these are instances of informal organization in operation, evidence that the system of social organization within the plant does not always function in accordance with the chart of formal organization. Informal organizations and systems of relationships grow up which are not specified on the chart and which may in some respects contradict it. The following examples will illustrate this fact.

The organization chart and job description state that worker Brown is directed in his work by supervisor Green. But worker Brown is a member of a car pool to which supervisor White belongs, and White is supervisor Green's superior. On the drive to and from the plant Brown and supervisor White become well acquainted and soon we find Brown is looking to White for much of his direction. Such arrangements as those described above "just grow" without any premeditation or planning.

Or take this hypothetical situation, variations of which have been depicted an untold number of times on movie and television screens:

The organization chart and company policy statement indicate that executive Black is responsible for approving leave for personal reasons for department head Blue. A member of Blue's family in a distant city has died and he wants some extra time to help settle the family affairs, but he feels that executive Black will grant only time to attend the funeral. Blue does not feel very secure in his relations with Black, but he has established very friendly relations with Black's attractive secretary. Blue arranges for the secretary to present his request for extra leave and, with a pleasant smile, a flash of silk, and a dash of French perfume, she is able to get it approved.

It is something more than understatement to point out that the above situation is not in the book!

Each of us has at one time or another recognized that his relations with others are critical to his success or failure. Sometimes these relations take the form of "pull," "drag," "prejudice," and favoritism." We usually regard these things as unfortunate and, at best, inevitable. They are considered private problems and, therefore, not within the realm of scientific investigation.

As a matter of fact, pull, favoritism, and prejudice are group phenomena and capable of investigation. They occur in work situations as extension of friendships, cliques, and personal antagonisms. As such, they are as much a part of the social organization of industry as the supervisory structure. Informal relations are not accidental or incidental to the operation of industry. On the contrary, no organization can function effectively if it does not contain a spontaneous network of interpersonal relations.

The study of informal organization is important if for no other reason than that it is needed to provide the complete picture of organization. We need to
know how informal and formal organization operate because the two are interactive. It is impossible to understand how the supervisory structure actually operates without knowledge of the informal social organization in it.

Informal organization and action appear to develop for several reasons. One is that the formal structure of management is not flexible enough for a variety of people, times, and conditions. In the case of corporations with widely distributed units, the formal structure may not make allowance for local customs. Company picnics or basketball teams may be so much the rule in a locality that a restriction against them is a serious detriment to employee morale.

Another reason appears to be a purely social one. People like to be with each other, to converse, to interact. Personal preferences in this respect may be based on a sense of humor, an interest in baseball, fishing, music, or on other factors not related to the work situation. The informal groups or cliques which form along such lines will not conform to the formal structure of organization and may operate counter to it, as in the case mentioned above of a friendship established in a car pool.

Informal organization within the work plant appears to perform definite functions on behalf of its members and may enhance or hinder the plans of formal organization. As suggested in the paragraph above, informal organization arises and persists because it satisfies the needs of its members. Specific needs will vary from work situation to work situation, but all groups feel a need to perpetuate themselves. It is "natural," essential, and almost inevitable that once groups arise, they do everything they can to perpetuate themselves. All customs, traditions, and folklore are assumed to be important and necessary for survival of the group, and no one questions why a custom should persist. Thus, one of the main functions of informal work organizations is to maintain whatever its members have found satisfying.

Another function of informal organization is to maintain a communication system. Once a group is established within an organization, it wants all the information that might affect its welfare. If information is not forthcoming through informal channels, the formal line of communication is tapped and then information spreads rapidly. Since the informal system of communication is so intimately connected with formal organizations, it is easy to understand why it is virtually impossible to maintain secret plans or policies. Chains of friendship span the entire work organization and the formal communication system is invariably tapped. Once established, a communication system functions to convey any information of interest to its members, ranging from official policies and plans to just plain gossip. The sudden resistance that management often encounters when it makes new proposals on wages, hours, pensions, seniority, recreation, or other plans may be explained by the fact that these proposals have already leaked out and been thoroughly discussed.

One of the primary functions of informal social organization is control, which is exerted toward its own members, toward other informal organizations, and toward formal organizations. A member is expected to conform to the customs and traditions of the group, to do a fair share of the work, not to profit at the expense of another member, and, above all, to remain loyal. Any member who does not uphold these expectations is subject to censure through a variety of techniques ranging from ridicule to violence.

The control of informal organization over its members is seen, perhaps, more clearly in its efforts to control the formal organization. Both management and union recognize that their plans, however, carefully laid, are often violated or modified by the workers, but management and the union seldom recognize that such action is often an attempt to adjust to changing circumstances as defined by the informal organization. For example, restriction of production, commonly found on all levels of industry, irrespective of occupation, frequently puzzles management and leads it to conclude that workers are motivated by nonrational sentiments rather than logic. But when viewed from the standpoint of informal organization, there is a greater amount of rationality and logic involved than is generally supposed. Management tends to see informal organization largely in the form of resistance, rarely in the form of assistance, and yet without the assistance of informal organization, formal organization often would be ineffective. This is frequently the case when managers try to determine every detail of production, for managers often are too far removed to be able to foresee many problems which arise. If their orders were followed completely, confusion would result and production would be lowered; so, in order to achieve the goals of the organization, workers must resort to their own methods and disregard lines of authority. Restriction of production, from the standpoint of informal organization, may be a matter of group tradition and persist even under almost perfect working conditions. Restriction of production may be direct or indirect, sporadic or persistent, and in cases it is related to the concept of a fair day's work. Two important rules are, therefore, that the worker should not overproduce and be a "rate buster"; neither should he underproduce and be a "chiseler." Past experience has taught workers that it is not
wise to produce as much as they possibly can, and folklore provides reasons why they should restrict production. The suspicion that workers have toward speed-up schemes is a rational response to the tactics many employers have used in the past. The folklore of workers contains many stories of incentive plans that resulted in increased production with no increase in income. These ideas persist whether or not a union exists, and the presence of informal organization functions to keep sentiments alive. To maintain his place in the group the worker must conform to these sentiments.

Still another function of informal organization is to provide interest and amusement in work life. In many instances the social life of informal work groups gives people their only social satisfactions. The singing, gambling, and horseplay on the job may give the only personal recognition and attention to people who would otherwise be in anonymous surroundings. If the work is monotonous and offers no future, all the satisfactions at work must be derived from inter-personal relations, and the activities are spontaneously invented.

Knowledge of informal organization is valuable for a number of reasons. Information on interpersonal relations in industry has been recommended as an aid in checking the accuracy of the formal organization chart; as an aid in planning anticipated organizational changes; as an aid in installing managerial devices, such as budgetary controls; as an aid in solving problems of communication; as an aid in locating people who can be counted on to facilitate action and clear up misunderstandings; as an aid in learning the “right” contacts to make in order to get information or action (often the most efficient way to get something done is not to go through channels); and as aid in locating leadership material.

As an instance of how knowledge of informal organization may be utilized to the advantage of management, a World War II investigation may be cited. The government asked the Research Division of the Harvard Graduate School of Business Administration to make a study of labor-management relations in California aircraft factories, long plagued with high rates of labor turnover and absenteeism. The researchers found that those shops with low rates of labor turnover and absenteeism had a team leader, a leader who had not been elected or appointed but whom every worker in the shop acknowledged as the leader. This spontaneously arisen leader had built up production the way a good football coach builds a random collection of rookies into a winning team. He boosted morale, he relieved the foreman of many problems of minor discipline, he introduced new workers in the shop to their jobs and integrated them into the work group. It was found that most absenteeism and labor turnover came from workers who did not belong to a team who were not a member of informal organization. Thus they had no social life in the factory, nothing to involve their interest and loyalty. They did not “belong.”

It is useless for management to ban informal organization. It will form anyway. The desire of individuals for association in work with others is compelling and is sure to find some form of expression. Well-informed managers are utilizing to their own advantage this drive to “belong,” organizing groups deliberatively, recognizing that in or out of industry, man is a social animal.
Character In Cotton

By Gaston Gage

Head, Yarn Manufacturing Department

Editor's note:
The following paper is a general summary of facts concerning character in cotton. It was written for cotton marketing students to give them some concept of a new phase in cotton grading. It contains many facts which will be interesting to our readers.

Characteristics of cotton are those things which are not apparent to the eye or learned from pulling the staple, but must be measured with a laboratory instrument. These characteristics in cotton affect its spinability and the quality of yarn that can be made, both as to appearance and strength. Character is very important in the end use to which the cotton is to be put and is an important item in its real value.

Traditionally, the value of cotton has been based solely on grade and staple, without regard to character. By the old method of evaluating cotton, Middling 1 1/16 inches cotton always sold for a higher price than Middling 1 1/32 inches although sometimes 1 1/32 inches cotton makes a better quality yarn than the 1 1/16 inches cotton, due to better character.

For years these measurements of character in cotton were used only by the research people including the plant breeder and the United States Department of Agriculture. Recently this question of character in cotton as it affects the value of cotton is getting more and more attention in both the marketing and the manufacturing fields. In the marketing fields, the manufacturer is beginning to specify certain limits on character measurements when he buys cotton. He is also using character measurements in planning his blending program rather than leaving the blending to pure chance.

Grade and staple will continue to be of prime importance in marketing cotton. Staple length as a general rule is a major item in value of cotton and will continue to be. Grade will also continue to be of major importance because it is a good indicator of the amount of waste that must be removed and color is important as it affects the quality of the product and its end use. Also, color may give a clue to character, as the yellow colors are generally symptoms of poor character.

There is room for improvement in the instruments used to measure character, but until this improvement comes about, what we have will suffice. The manufacturers do not agree on what combination of characteristics are most desirable. They will have to decide this. Then the plant breeders will have to produce a variety of cotton with these most desirable characteristics.

Marketing cotton by character as well as by grade and staple will complicate the marketing procedure. Contract specifications will have to be worked out and standards set up. Then machinery will have to be devised to settle disagreements between buyer and seller.

A new basis of premiums and discounts will have to be worked out. Now grade and staple are the only points taken into consideration in deciding on premiums and discounts.

There follows a description of fiber qualities which require laboratory instruments to measure them and the instruments used.

1. Fiber Length and Uniformity. Fiber length has always been taken into consideration when the cotton classer stapled the cotton. But there is something to length besides what the classer calls.

One instrument generally used to measure length and uniformity is the Fibrograph. It was developed by Dr. Hertel at the University of Tennessee. A sample of cotton is combed out so that the fibers are reasonably parallel, with two combs. This leaves the ends of the fibers sticking out from the combs. These fiber edges on the combs are moved through a beam of light. The more uniform the fiber lengths, the more regular the shadow. The machine operates so that this shadow is projected as a curve and a formula used to convert to uniformity and fiber length.

This instrument measures (a) the average length (b) the upper half mean length and (c) the length uniformity ratio.

The “upper half mean length” as measured by the Fibrograph is to all intents the same length as that called by the cotton classer when he pulls the staple. This had been determined by numbers of checks. The Fibrograph is much slower than the cotton class-
er in getting this information. A cotton classer can staple about 300 bales of cotton a day while a labora-
tory technician can work only about 50 samples on the Fibrograph.

The “upper half mean length” is the most impor-
tant of the length measurements. This length is the
most important item in determining how fine a yarn
cotton can be spun into and also its strength. But
this length is not the only item as will be seen later.

This “upper half mean length is the only item of
length that is very important in spinning yarn from
carded cotton. In the case of long staple combed cot-
ton, the “length uniformity ratio” is important in
that the amount of comber waste is determined by
this item. The more uniform the cotton, the less
waste will be removed on the comber.

The “average length” as determined by the Fibro-
graph apparently is of no value, the information
having no practical use.

The variety of cotton planted is the chief determin-
ing factor in fiber length. A variety of cotton that
normally produces 15/16” cotton is never going to
produce 1 1/16” cotton, regardless of how favorable
the growing conditions.

Other factors affecting length are moisture, sea-
son of growth, and soil and fertilization. As shown
by experiments with irrigated cotton, the more the
moisture, the longer the staple length. Of course this
covers a rather small range and with excessive mois-
ture a limit is reached. Also, late pickings of cotton
show a slightly shorter length than earlier pickings
This is attributed to shorter periods of sunlight and
cooler nights. Better soil and fertilizer will show a
slight increase in length.

The reason the longer staple gives more strength
is that the strength of yarn depends partly on the
drag between fibers. Cotton yarn is made up of rela-
tively short cotton fibers laid parallel to each other
and twisted together. When you break a piece of cot-
ton yarn, there is some fiber breakage and some fiber
slippage. The longer the staple length, the
the overlapping and consequently the less
slippage.

Also as a general rule, the longer the staple length,
the finer the fibers. Thus, for the same yarn num-
ber, there are more fibers per cross-section which
adds to the strength of yarn. The same things that
add to the strength also make possible the spinning
of finer yarn.

Another method of measuring fiber uniformity is
the Suter-Webb Sorter. This is a slow hand method
of sorting the different fiber lengths in a sample on
to combs. From this a curve showing the various
fiber lengths can be plotted. This gives a result com-
parable to the “uniformity ratio” obtained on the
Fibrograph. It is generally agreed that the more
uniform the staple length, the better the appearance
of the yarn. Irrigation studies show that the uni-
formity increases with the moisture during growing.
Uniformity is also a varietal characteristic.

2. Fiber Finesseness. Fiber fineness is getting more
and more attention as one of the fiber qualities that
affect the value of cotton. It is important in deter-
mining the strength of yarn, the appearance of yarn
and the numbers into which the yarn can be spun
and the maturity of the fibers.

The instrument commonly used to measure fiber
finesseness is the Micronaire. This instrument works
on the principle that the finer the cotton fibers are,
the closer they will pack together and the more re-
sistance they will offer to a stream of air passing
through. It measures the resistance of air flow under
standard pressure through a standard weight of 50
grains of cotton in a standard sized cylinder with a
standard perforated plug.

The Micronaire tells nothing about the shape of the
fibers or whether some of the fibers are coarse and
some fine or whether they are all one size.

The higher the Micronaire reading, the coarser the
fibers. Thus, since short staple cotton is almost al-
ways coarse fibered cotton, short staple cottons have
higher Micronaire readings. There are some few ex-
ceptions to the rule that the longer the staple the finer
the fiber.

Fine fiber contributes to yarn strength, especially
for fine yarn numbers, because the fine fibered cot-
ton means more fibers per cross-section and this
gains in importance as the yarn gets finer.

Fine fibers have to be processed slower on the
Card and coarse fibers to avoid fiber damage at this
process. This means that the manufacturing cost
increases on fine fibered cotton.

Fine fibered cotton is more prone to make neps
than coarse fibered cotton and neps are undesirable.
The coarser fibered cottons tend to make better ap-
ppearing yarn.

The Micronaire does not differentiate between
fibers that are fine due to their varietal nature and
the ones that are fine due to immaturity. If the
fineness is due to immaturity, the product is of poor
quality from the point of strength and dyeing quali-
ties. Immaturity is that condition when the hollow
inside of the fiber does not fill out properly, causing
the fiber to be weak and to take dyes differently.
As fiber fineness is a varietal characteristic, if the variety of the cotton is known, and the area of its growth is known, the Micronaire reading may be used to interpret maturity. Weather conditions and soil have some effect on fineness. Irrigation studies show that extremities of dryness or moisture give a finer fiber than medium amount of moisture.

The Micronaire is fastest, least subject to error and most economical of all the fiber measuring devices.

3. Fiber Strength. Fiber strength is an important characteristic of cotton as it has great influence on both the strength and appearance of yarn.

The Pressley Cotton Fiber Strength Tester is an instrument for testing fiber strength. It takes a flat ribbon of about two milligrams of cotton. This ribbon is clamped between two pairs of jaws like two small vises. The ends that extend beyond the jaws are cut off so that finer length does not enter into the weight of cotton broken. A weight is then run out a beam, this weight pulling on the ribbon of fibers in the jaws. When the fibers break, the weight stops. The pounds reading on the beam is then taken and the broken fibers recovered and weighed in milligrams. This weight and the pounds per square inch which is the term used to express strength of cotton fibers.

There are other instruments on the market which measure this same break. Dr. Brown and Professor Graham, of the Clemson School of Textiles, designed one and it is being manufactured. It uses a stationary pendulum instead of a beam which gives a fixed rate of loading, avoids overshooting and gives a graph to show stretch.

Fiber strength is second only to fineness in determining strength of yarn in cottons less than one inch in staple length. Fiber strength is first in determining strength of yarn in cotton whose staple length is from one inch to 1 3/16 inches. A difference of 5 to 6 thousand pounds in breaking strength of fibers is equivalent to 1/32 of an inch in fiber length in adding to strength of yarn.

The stronger fibers, other characteristics being the same, make it possible to spin finer yarns.

Cotton with high fiber strength does not have as many neps in the web as weaker cottons, every thing else being the same.

So the value of strength in cotton fibers varies with the end use, the yarn numbers to be spun and the staple length of cotton. In some instances, it is a valuable asset. In other cases the value is negligible.

Irrigation studies show that cotton grown with less water is stronger than cotton irrigated more often. This is especially true in the case of the first picking, far less pronounced in the case of the second picking. In fact, the difference is hardly significant in the case of the second picking.

4. Maturity. Cotton fibers grow in the form of a round hollow tube. The first growth of the fiber is in length, then a week or ten days before the boll is to open, the fiber starts to build up on the inside with a cellulose lining. Anything that interferes with this results in immaturity. Whether cotton is mature or immature determines partly its value as a fiber.

There have been developed several methods to measure maturity. The most commonly used method is to look at a cross-section of the fiber with a microscope. If the lumen (hollow inside the fiber) is less than twice the thickness of the fiber wall, it is a mature fiber. If it is more than twice the thickness of the fiber wall, it is immature. The different fibers—mature and immature—are counted and the per cent relationship between the mature fibers and the total fibers under observation is the per cent maturity. The skill, experience and judgement of the operative and the adequacy of the sample govern the accuracy of the measurement.

Another test is the Caustic-aire test. This test uses the Micronaire. The sample is first tested for fineness. Then the sample is treated with caustic to swell the fibers. Then it is dried and checked again for fineness. The relationship between the two tests indicates whether the fineness is a natural condition of the fibers or whether the fineness is due to immaturity.

Other methods not commonly used are the dye tests and the bundle test.

Immature fibers are weak fibers. Therefore immature cotton makes weaker yarn, but there can be exceptions. Sometimes some immaturity in coarse fibered cottons adds to the yarn strength because it adds to the fibers per cross-section in the yarn.

The appearance of yarn and cloth suffers in the case of immaturity because immature cotton is one of the chief causes of neps in the card web.

Immature fibers take dye differently from mature fibers. Therefore when yarn or cloth is to be dyed and the sharpness of the dyeing is of paramount importance, immature cotton can not be tolerated.

Fiber maturity ranges from a low of about 60 per cent to a high of about 85 per cent. Average maturity is between 70 and 75 per cent.

Anything which stops the growth of the fibers causes immaturity. Boll weevil infestation may cause immaturity by stopping the growth of fibers around the boll weevil puncture. Frost stopping the growth of the plant will cause immaturity because the fibers do not develop. Both of these things cause yellowness in the cotton so this yellowness can be taken as a symptom of immaturity. Generally speaking, anything that interferes with the continued growth of the fiber, including starvation, will cause immaturity.

So what is the result of all this? The only answer is, it all depends on the yarn numbers to be made and
what the yarn is to be used for. In one case, a certain characteristic is very desirable, under other conditions its value is negligible.

It will cost more to sort the cotton into even running lots by character as well as grade and staple. Do the gains justify the cost? In some cases yes, in others, no.

As the characteristics tend to be largely controlled by variety planted and where grown, chance blending will not always suffice. The manufacturer is now using his character measurement largely to get a uniform blend. This makes certain that he is never feeding in at one time a lot of cotton with undesirable characteristics for what he is making, but rather feeding in cotton uniform in character as well as grade and staple.

More and more cotton is being bought by mills with fineness specifications in the contract. Some cotton is being bought with strength specifications. When these are put in, the cotton will necessarily cost more. As yet there are no standard premiums. As more and more mills begin to put character specifications in their contracts, the ones who do not do this will get nothing but rejects and dregs, so they will be forced to the same policy.

Then some method of settling disputes between buyer and seller who disagree over these measurements will have to be established. There already is such a body to settle disagreements as to grade and staple.
Growing Pains

W. T. Linton, Executive Director
Water Pollution Control Authority and Director
Division of Sanitary Engineering

The textile industry in South Carolina is one of the more substantial economic factors sustaining and improving our way of life. We have in the South developed a sense of proprietorship and pride in the textile industry sometimes without due consideration to the many problems which confront this important industry in its period of expansion and attendant “Growing Pains.”

The causes contributing to the intensity of these growing pains are myriad, and they must be evaluated and controlled if the industry is to continue to make its significant contribution to the public well-being and at the same time operate at a level which will motivate the desire of management to undertake and accomplish an orderly program of expansion designed to meet competition within the industry and provide a useful, attractive and necessary product for the markets of the world.

There is one symptom of the “Growing Pains” in the textile industry coming into outstanding importance at an alarming rate of speed and if allowed to develop without proper diagnosis and control will result in a debilitation from which complete recovery will be questionable. This symptom includes the sometimes indiscriminate utilization of our natural resource—water. Since water, along with food and air, is a necessary requisite to our existence and is playing a more important part in the expanding economy of our people, we must of necessity give added consideration to the conservation and proper utilization of this natural resource.

Recent world events have pointed up with shocking emphasis the importance of one water use in the philosophy of nations of the earth. Deprived of the transportation water affords by simple existence and location, national economies suffer, ways of life are changed, economic strata are depressed and wars are waged. The many uses of water other than transportation are just as significant when we consider the areas and people served as a universe. In satisfying the needs for water, quality as well as quantity, must be given consideration. Thus it becomes evident that for the many and varied applications of water use, control must be exercised to the extent that no one water user can be allowed to deprive any subsequent user of his rights thereto.

How the textile industry is involved in the problem of water use within South Carolina certainly is obvious to that portion of the industry with experience in expansion. However, there is, I am sure, a very small number of people who realize the many problems faced by this expanding industry in the matter of waste disposal. All waste must be disposed of to the environment and the waste from textile operations is no exception. Think for a minute of the complexities of any one textile operation presenting a waste problem then multiply this by an indefinite number of variations of waste constituents, concentrations and fluctuations in discharge rates of various chemicals to surface streams which are never constant and you have stated the original conception of only one of the pains experienced in growing. To disregard the implications imposed on an expanding industry by lack of admission that waste treatment poses a problem worthy of consideration denies the existence of law requiring that pollution of our precious water supply be prevented and admits inadequate, immature, and faulty judgment in the formation and prosecution of a program which, if it is to succeed, must have continuing progress and expansion as an integral part. Only in this philosophy of progress can we continue to experience the exhilaration of “Growing Pains” and look with hope to the future. Without this philosophy the future is now. The growing is ended and only the pains are left.

South Carolina cannot afford to express its devotion and appreciation to her past generations by doing less for posterity than was done for us.

WE MUST GROW in — W - isdom
A - pititude
T - olerance
E - nergy
R - everence

if we are to prepare a worthy salutation to the future.
Scholarships and Financial Aid

William C. Whitten
Chairman, Student Awards Committee

The students enrolled in the School of Textiles are fortunate, among other ways, in that the textile industry has provided financial aid to needy students in amounts greater than any other school on the campus. Of course it is desirable that the amounts of financial aid be even greater—and it is growing—but we can be thankful for what we have and appreciative to those who are providing this help.

Up until the last month, all of these scholarships were awarded principally to juniors and seniors; only one was available to sophomores and none to freshmen. There is certainly reason to see why this was true. Most of the awarding companies feel that a student should prove himself in college for a period of time before eligible for financial aid. On the other hand, it can be argued, I believe, that a man who has put in a successful two or three years in college (that is, one who would be a good prospect for a scholarship), would see the value of completing his education and would somehow make sufficient effort to provide finances. Many studies have shown that a good percentage of high school graduates are not attending college when they are, in reality, fully capable of fulfilling college requirements. They are not attending either because of financial difficulties or disinclination to attend. With an almost certain prospect of future labor shortages, and particularly trained and skilled labor, it would seem highly important that this segment of the high school population be aided (if necessary) to gain further education and training. (The group who are simply disinclined to attend college should be ignored until their viewpoint changes, it seems doubtful if their accomplishment would be worth the expense.)

Within the last month, the college has been informed that for the first time a company is wishing to grant annual scholarships to freshmen (two $500 ones). As this is being written, no program of selection has been set up but will soon be.

Most of the scholarships are awarded on the basis of scholastic ability, need, leadership potential, evidence of good character or some combination of these features. Though a few do not consider financial need, most make this one of the factors for consideration.

Some of the companies or organizations granting scholarships of all types which are available to textile students are the following:

American Association of Textile Chemists and Colorists
American Enka Corporation
American Viscose Corporation
Blackmon-Uhler Corporation
Burlington Industries, Incorporated
Celanese Corporation of America
Ciba Company, Incorporated
Dow Corning Corporation
Interchemical Foundation
Keever Starch Corporation
Leon Lowenstein Foundation
Owens-Corning Fiberglas Corporation
Seydel-Wooley

In addition to these which are awarded by the college student aid committee, are scholarships which are granted by companies directly and usually to students in the city in which the company is located. These scholarships, directly awarded, most probably constitute a larger sum than we have to award. An additional factor here is that these awards are often available to entering freshmen. Persons in need of financial aid should make inquiries in their community as to the availability of such grants.

In addition to outright grants, there are a number of loan funds both by the college and by industries of the state. Of course, these have to be repaid, but at little or no interest.

Also the college has a few jobs which are filled by student help. The Director of Student Aid should be contacted concerning this. He also can locate outside jobs at times for some.

For some reason there exists a hesitancy on the part of some students which keeps them from seeking scholarships and other aid. If you can't qualify, of course, there is no use in wasting anyone's time, but if you feel you have any chance at all then don't hesitate (and don't keep putting it off either). You never know what the qualifications of the other applicants will be.

Finally, I would recommend to prospective students that they seriously consider the financial aid that can be acquired by participation in the ROTC program. It is no small change, and is outlined in the college catalog.

If a student is a good student, I don't believe that the faculty and administration will fail to find some way for him to overcome financial difficulties in order to remain in college.
Guest Editorial

Dr. R. F. Poole, President
Clemson College, Clemson S. C.

The textile manufacturing industry is an important part of the economy of South Carolina. It helps to finance the cost of and maintain a sound state government and provides employment for many of our good people. It is conceivable that it will continue to prosper but at other times it may feel the effect of keen competition and changes in home and world markets. South Carolinians may well be concerned about the welfare of textile manufacturing and indeed about the cotton industry as a whole. The producers of cotton in recent years have been confronted with less income from their product and by rising costs of materials essential to cotton production.

Important as these changes and fluctuations may be they should not deter those who are interested in receiving an education through study of the curricula offered in textiles. Along with excellent basic education in chemistry, mathematics, physics and English a student in the textile courses is given practical knowledge which will enable him to do excellent work in the textile industry or in the many allied fields.

Just what position a graduate secures in the industry will depend upon his total qualifications. Able professors may inspire and teach essential facts about textiles but these men cannot do everything for a student. He must learn for himself the fine points of a winning personality and discipline his working time to achieve success. The smart student will watch for every opportunity to broaden his education and will take advantage of his time to prepare himself as thoroughly as possible to meet the exacting needs of the cotton industry.

Clemson graduates in textile curricula, especially in textile engineering, are making names for themselves and at the present time Clemson cannot meet the demands for graduates. Fortunately the textile interests need college men who are well trained and who possess qualities of leadership. For the most part these men are privileged to live in the southern states.
Economics and Textiles

By E. J. McVey, Vice President
Saco-Lowell Shops

The current complexity of the problems facing our national textile industry makes it extremely difficult to accurately predict the level of activities for the textile machinery industry through 1957. The activities of the textile machinery manufacturer in the past have always been closely related to the spinning and weaving mills. Statistics and experience have shown that when the mills are operating on a profitable basis and have a surplus of funds they then show an interest in machinery and equipment which will increase their production, lower their costs or improve their cloth.

However, under the conditions prevailing at this time, we sense a tendency of the mills to inaugurate betterment programs with a certain degree of caution as they all seem to recognize that the variables in world conditions which will affect their operations, must be carefully and accurately evaluated. Most of these variables are economic or political in nature and their eventual solution will no doubt affect the textile industry in the overall picture. Naturally, there is grave concern over the increase in export of textiles from the low wage countries in the Far East and elsewhere, operating in many instances on low cost raw materials locally grown. In spite of these incipient sources of troublesome conditions, there are several compensating factors. First, for instance, we have a steady increase in our population together with a tendency towards a definite improvement in the standard of living. This growing population is calling for more sheets, pillow cases, towels and other domestic textiles than ever before. Our heavy industries in spite of the influx of paper or similar competitive materials, continue to increase their consumption of needed woven and twisted textiles at a satisfactorily increasing rate. The number of spindle hours per month continues at a very high level throughout the industry. Our progressive corporations are spending significant amounts of money in research and development seeking ways to make better fabrics at a lower cost and to increase the consumer's consciousness in textiles so that the industry will earn its proportion and share of the consumer's dollar. One of the most encouraging and significant aspects for 1957 is the willingness if not eagerness of mills both large and small to seek the developing and finalization of improvement plans both on a long and a short range basis.

One of the encouraging results of these fact finding and research programs seems to be the willingness of management to gradually depart from the old benchmark so long used in appraising the value of new textile machinery. For many years the value of new equipment was based upon the return on the investment regardless of any other result of the mill's prosperity. Today, the advantage of new machinery is in many cases no longer judged by this yardstick but by the results the new equipment produces in the way of better quality and lower cost. Smart aggressive management is no longer willing to sit complacently around while their equally smart and aggressive competitors are capturing part of their market because of lower costs and better quality in their competitors' fabric. Their competitors are able to make better goods at lower cost because they have taken full advantage of the technological advancement in new machinery which has brought about a definite increase in the production per man hour. Financial circles are now willing to concede that lower cost and better quality are equally as important as a gross return on the investment. Management is beginning to realize that obsolescence is a creeping sickness like a cancer or high blood pressure and that unless steps are taken to arrest its progress the time will come when liquidation will be a prime subject of discussion. Thus, it is necessary to forget about the return on the investment and to concentrate on the advantages accruing from better quality of production, more production per man hour, lower cost per pound and higher recovery of raw material.

These are the benchmarks of which successful management must judge its new equipment and not by an obsolete benchmark. Now, as more and more mills improve their operations and consequently their competitive position through the acquisition of new machinery, the burden on the management of mills with obsolete or semi-obsolete machinery will continue to become heavier and heavier and will no doubt soon reach a point where even the most conservative management must realize that his mill can no longer drift and expect to "buck" the "current" of progress. For this reason it is our hope and prediction that 1957 will be a year with better than an average level of activity for textile machinery manufacturers, because there are more than fifteen million spindles and a corresponding amount of preparatory machinery on the way to rapid obsolescence, and it is the replacement of this equipment that holds a promise for the textile machinery manufacturers.
Clemson Develops New Method of Knitting

T. D. Eiland, Associate Professor
Hugh M. Brown, Dean
School of Textiles

Carrying out ideas of Professor T. D. Eiland and Dean H. M. Brown, a new method of knitting has been developed at Clemson. Using the new principles, Professor Eiland has engineered and designed a working model for knitting 24" fabric. The novel feature of the machine is that the usual needles having beards and latches are not used, the knitting being accomplished entirely by the use of yarn guides.

The yarn guides are tubular in character, mounted in two warp bars working adjacent to a slotted fabric guide which serves to keep the fabric centered between the two sets of yarn guides and also to slip the loops free of either set of guides alternately at the proper time in the cycle. The warp bars, yarn guides and fabric guide can be seen in the photographs.

THE BOBBIN AND BEAKER
Figure 1 shows a few guides. The (b) yarns are shown passing through guides (b) entering the edge of the fabric guide and thence around the yarn guides (a) and re-entering the fabric. In the next part of the cycle the yarn guides (b) will pass under the yarns from the guides (a) forming loops of yarns (a) around the guides (b). The guides (a) will then be withdrawn from the loops shown around them in the figure. The whole cycle will then be repeated in similar fashion by yarn guides (a) passing under the yarns coming from the guides (b). Thus, there is always a set of loops on one or other set of yarn guides.

While the yarn guides of either bar are withdrawn the bar can be shifted laterally with respect to the other bar any number of ends before passing under the yarns from the other bar. This lateral shifting of one bar with respect to the other is accomplished with a cam operating on the end of a shaft which carries the upper warp bar. Though it is possible to have a machine on which either warp bar may be shifted, it seems practical to do all the shifting with one warp bar.

Not only is it possible to shift one warp bar when its yarn guides are completely withdrawn from the loops but also it can be shifted when the tips of the yarn guides have engaged the opposite set of yarns. Thus the yarns of one bar may be shifted laterally either way with respect to their last position in the fabric and also the yarn guides on one bar can be used to carry loops of yarn from the opposite bar laterally in either direction so that both (a) yarns and (b) yarns can be simultaneously shifted from their last position in the fabric.

It is obvious that a large variety of patterns can be produced since either type of shift (or both types of shifts) can be used at will in either direction. The pattern can be made still more complex by changing from one pattern to another for any number of courses as the knitting progresses, producing a cross-wise band effect. It is believed that many of the fabrics knitted by this method cannot be produced by the usual knitting machines. The fabrics knitted by this machine more nearly resemble some crocheted fabrics.

The machine especially lends itself for wide guage material but built with precision design it may be possible to knit rather finely meshed fabrics. Even with a course mesh machine by carrying the loops of yarns laterally on the inside of the fabric, heavy, dense character fabrics are made. On the other hand, rather open fabrics with great elasticity in both directions can be created.

The machine is only in the experimental stages in more or less a mock-up form and it remains to be seen what speeds of production can be had, how fine a guage would be practical and what various uses may be for the fabrics.

Acknowledgement should be made to the Sirrine Foundation. This development was only possible by Sirrine funds which enabled Professor Eiland to carry on this work during the summer months.

MODERN MACHINERY . . . the nation’s largest warehouse stocks of new and rebuilt equipment for HOSIERY, OUTERWEAR and UNDERWEAR MILLS, and DYEING and FINISHING PLANTS.

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Outstanding Seniors

Isam E. Ballenger, known to the students as “Dick” is a Textile Chemistry major from Inman, S. C., Dick is a very versatile person in that he readily applies himself to any new task.

During his stay at Clemson he has participated in many extra curricular activities. These include being Secretary of the Student Body (Junior year), and YMCA Councils (Sophomore, Junior and Senior years). At the present he is Vice-President of the YMCA Cabinet, Co-Editor of the YMCA Handbook, Program Chairman of the Baptists Student Union, Student Chaplain, Corresponding Secretary of Blue Key, member of Tiger Brotherhood, and a member of the American Association of Textile Chemists and Colorists. In ROTC he has the rank of Cadet Captain.

Dick received honors for his junior year and was this year elected to “Who’s Who in American Colleges and Universities.”

Dick will finish in June and plans to enter his field of Textile Chemistry until his two year period of service comes up.

Edward F. Puryear, a Textile Manufacturing major, was born in Athens, Alabama, but now makes his home in Cheraw, S. C.

Since Edward is a veteran of the Korean War he is a member of Clemson’s Veteran’s Club. He is also Senior Warden of Phi Psi—the textile honor fraternity, and a member of Phi Kappa Phi—a scholarship fraternity. During the time he has been at Clemson, he has received honors 3 semesters and high honors one semester.

Upon graduation he plans to enter the textile field immediately.
One of a series highlighting the engineer's contribution to industrial progress

MATERIALS HANDLING

The cost of handling the materials used in production — be they yarn, fabric, raw fibers, liquids, bulk chemicals, coal or the finished product — accounts for an important portion of total manufacturing costs. This is especially true in textile mills where products are handled and rehandled, often in many different forms.

Modern materials handling equipment and systems, carefully selected and skillfully planned, can effectively enhance your position in today's competitive business economy.

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A DEPARTMENTALIZED ENGINEERING ORGANIZATION SERVING BUSINESS, COMMERCE AND INDUSTRY
Faculty Members Attend American Viscose Seminar

During the summer seven of our textile school staff attended the Fourth Seminar for Textile Institute Faculties at American Viscose Corporation, Textile Research Department, Marcus Hook, Pa. Those were: Profs. T. A. Campbell, Jr., J. C. Hubbard, Jr., L. H. Jameson, J. H. Langston, J. H. Marvin, J. L. Thompson, and C. V. Wray. This was the largest delegation of any textile school represented.

Talks were given by several members of the American Viscose research staff. Their subjects were as follows:

- "Rayon Outgrows Style" by Mr. R. MacHenry, Industrial Division.
- "Super Rayon for the Tire Trade" by Mr. A. B. Baker, Tire Yarn Technical Sales.
- "Rayon-Cotton Blends" by Mr. W. K. Simons, Staple Technical Sales Division; Mr. R. Bounet, Textile Development Branch; Mr. I. H. Welch, Dyeing and Finishing Division.
- "Application of Solution-Dyed Yarns" by Mr. L. L. Walmsley, Dyeing and Finishing Division.
- "Nylon Acetate Tricot Fabrics" by Mr. J. M. Roughan, Consumer Division.
- "Developments in Warping of Filament Rayon" by Mr. G. W. Byers, Mr. G. A. Glarner and Mr. J. A. Roberts—all of the Weaving Division.
- "Testing and Testing Methods" by Dr. C. O. Wern er, Technical Records Division.
- "Styling of Rayon and Acetate Fabrics" by Mr. R. Bounet.
- "Wash and Wear and Other Durable Finishes for Rayons" by Mr. I. H. Welch, Dyeing and Finishing Division.
- "Testing Fiber Friction" and "The Lindly Yarn Inspector" by Mr. R. D. Heffelfinger, Mechanical Development Branch.
- "Present Dyeing Procedures for Rayons and Acetates" by Mr. J. A. Woodruff, Dyeing and Finishing Division.
- "Current Status of the Non-Woven Fabric Industry" by Mr. H. E. Shearer, Industrial Division.

In addition to the above talks and discussions pertaining thereto there were tours over the various divisions of the research department so that first hand observation could be made of the work being conducted.

From the remarks of the faculty members this was a very worthwhile seminar. Also that it would be most enlightening if other textile concerns would have meetings of this nature.

S. C. POINTS WAY IN EMPHASIZING THE IMPORTANCE OF TEXTILE EDUCATION

(Continued from page 7)

cause it is from the industry that lecturers must come to cover the various subjects involved in this series.

At the dinner meeting on November 13, Mr. Marion W. Heiss, Vice President of Cone Mills Corporation, and immediate past president of the North Carolina Textile Manufacturers’ Association, declared that the future health of textile colleges and of the textile industry would be shaped by the caliber of those graduates which make textiles their career. In emphasizing the importance of quantity in the total picture, Mr. Heiss was particularly careful to point up that quality in these graduates is imperative. Mr. Heiss recommended very strongly that students be given a better concept of merchandising, knowledge of cost efficiency, and the economics of manufacturing. In addition, he stressed the need for better training in public speaking, human relations, and other related problems.

At the luncheon on November 14, Mr. J. Spencer Love, Chairman of Burlington Industries, sounded the clarion call for new optimism throughout the textile industry by predicting a "real upswing" in the textile industry during the next ten years. Mr. Love complimented the textile industry of South Carolina and Clemson College for having taken the lead in emphasizing the importance of over-hauling the industry’s wrongway public relations program.

Mr. Love stated that "We are approaching a period of balanced supply and demand between the three shifts and the growing population and the passing of the marginal mills. In a decade there will be a start of a new mill building program. Within ten years you will see the boom days again in this industry. "Even in hard times, there is a paucity of good men. The opportunities of our industry are greater than ever before."

In my opinion, the greatest single problem facing the textile industry today is the impending shortage of young men who have the potential to develop into the future leaders of the textile industry. The differences in operating costs between efficiently operated and marginal mills is greater today than in any previous time in the history of the textile industry. If we are determined that the textile industry of the future will continue to be progressive in offering young men career opportunities unexcelled by any other industry, then we must all face up to the importance of proper training in the colleges of America, not only in our textile schools, but in all other formal instruction, whether it be liberal arts or professional.

I repeat that it is very stimulating to note that South Carolina is taking the leadership in recognizing this problem and in doing something about it.

THE BOBBIN AND BEAKER
The New Sirrine Library Is Now Open

Hugh M. Brown, Dean
School of Textiles

Three years ago, the Sirrine Foundation provided for a textile library as a sub-division of the main library at Clemson College. Funds were provided for the purpose of employing a librarian and an annual allowance of $1000 for new books and library equipment.

Due to the lack of space for the various functions of the College, the area for the library in the Textile Building had to be used for other purposes. With the completion of the Agricultural Center last spring, the space for the textile library was made available. This provides a floor space of approximately twenty-four by sixty feet for a main reading room plus an ample area for a librarian's office and a small workroom. The room has been redecorated with a new cellotex ceiling and an asphalt tile floor. The walls are a satin finish light green with the upper portion and ceiling in eggshell white. The trim of the room and new draperies are rose-beige in color which gives a pleasing aspect with the green walls and sand-color floor. The room is equipped with excellent oak tables, chairs and book cabinets done in a soft finish natural oak. The book cabinets are of counter-height, giving the room an open spacious effect. These cabinets project into the room dividing it into alcoves and also will be used for the storage of all books, making the usual book stacks unnecessary. The tables are a beautiful pedastal type, thirty-six by ninety-six inches. All of the furniture except the chairs was made in the College Services Woodshop and the quality of this work is such that they can be proud to have it on exhibition in the library. Lovely potted plants have been donated by one of the professors which greatly add to the pleasing attractiveness of the room.

The room is amply lighted with new fluorescent tube fixtures making the room one of the best reading and study areas on the campus.
We are gratified that the students are making more and more use of the library during the day and arrangements are being made to have the library open during the evenings as has been requested by a large number of students.

During the past years, a considerable number of books have been purchased and, in cooperation with the College Librarian, are being catalogued according to the Library of Congress cataloging system. All of the general textile publications are available in both libraries and bound volumes are available back over a period of years, together with an index for each year. The Journal of the Textile Institute extends back to 1932.

The librarian, employed three years ago, is Miss Lois Reiss, who is very helpful to the students in the library and who has been aiding in the publication of THE BOBBIN & BEAKER. Inquiries concerning books and trade journals in the library should be addressed to her.
NEW MEMBERS OF PHI PSI

The Iota Chapter of Phi Psi recently took in fourteen new members. Membership in the fraternity is based on the student's class standing in the Textile School; students in the upper third of the Senior Class, upper fifth of the Junior Class, the top two men of the Sophomore Class are considered for membership. The new members pictured above are (from left to right):

Row 2: B. B. Pratt, R. K. Hall, W. R. Lewis, J. P. Campbell
Row 3: W. H. Dill, W. L. Reed, R. G. Revis, O. B. Martin
Row 4: D. H. Logue, D. S. Bratkowsky

This year's project is selling towels with "Clemson Tigers" woven in the center. These towels are sold with the hope of adding new furniture to the Phi Psi Room. Inquiries concerning the purchase of these towels should be addressed to L. T. Runge, THE BOBBIN & BEAKER, School of Textiles, Clemson, South Carolina.
Interviews

To aid students in their interviewing, THE BOB-BIN & BEAKER has initiated the policy of publishing interview dates for several months ahead. Also, Alumni of the College may receive the placement bulletin by writing to D. G. Hughes, Director of Placement, Clemson College.

The interview dates listed below are not all the companies visiting the campus, as many textile companies are reluctant to schedule interviews far in advance. The latest listings can be obtained in the Placement Office. Those listed below are confirmed on the dates shown.

February 12: Fieldcrest Mills
February 15: Vanity Fair Mills
February 18: Woodside Mills
February 19: Woodside Mills
February 20: U. S. Rubber (Textile Division)
February 21: U. S. Rubber (Textile Division)
February 22: Deering Milliken Corporation
February 23: Dan River Mills
March 1: Dan River Mills
March 13: Celanese Corporation
March 14: Celanese Corporation
March 19: United Merchants & Manufacturers
March 20: Mobasco Industries
March 26: Burlington Industries
March 27: Burlington Industries

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TWENTY-EIGHT
To make it possible to have a highly qualified staff in the School of Textiles, an industry-supported foundation was established during the war. The funds in this foundation have been contributed by the textile companies in the State and now total nearly one million dollars, which figure is expected to be exceeded soon. The income from this large fund is used exclusively for the School of Textiles at Clemson primarily to improve the teaching staff. Under the present plans, the textile school is benefitting in five ways: (1) Enhancement of the retirement payments by the State for all members of the staff retiring with the rank of associatet or full professor; (2) The Foundation contributes half of the salary for an “extra professor” in each of three departments. The additional faculty members have research projects but take classes for short periods to enable the regular teachers to visit mills, attend conferences, etc. (3) The Foundation greatly increases the travel funds to facilitate visitation and study of the mills in the State (4) Foundation funds have been contributed for maintaining a textile division of the Library in Sirrine Hall. The contributions provide for the salary of a librarian an an annual allotment for books and equipment for the library. Ample space with excellent lighting and attractive furnishings is devoted to this subject; (5) The Textile School magazine, THE BOBBIN & BEAKER is also under written and partially supported by the Sirrine Foundation.

Twice a year a committee of the Foundation meets and advises with personnel of the school to find ways to promote the quality and standing of the school.
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