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In memory of those who made the supreme sacrifice, respectfully we make this

Dedication

"His grave a nation's heart shall be, His monument a people free!"

—Caroline Atherton Briggs Mason

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Guest Editorial

By DR. CLAUDIUS T. MURCHISON
President, The Cotton-Textile Institute, Inc.

Dr. Murchison, a native of North Carolina, received his education at Wake Forest and Columbia University. After serving for a number of years as Professor of Economics at the University of North Carolina, he was named director of the Bureau of Foreign and Domestic Commerce of the Department of Commerce and a board member of the Export-Import Bank. Since November 1935, he has served as president of the Cotton-Textile Institute, Inc. He is the author of "Resale Price Maintenance" and "King Cotton is Sick" and co-author of "Management Problems" and "Culture Below the Potomac." We take pleasure in presenting Dr. Murchison’s guest editorial.

The American textile industry stands on the threshold of a new world bright with promise.

Ahead of the young men about to embark on textile careers lie boundless opportunities.

In order to achieve the glittering goals that beckon to those with eyes to see, much training and much study are needed and much effort must be expended.

Already visible to those who have spent most of their lives in textiles are the outlines of a new industry that is being formed by the technical advances of the last decade. It is obvious to most that over the next few years the industry will be transformed by the application of wartime achievements and discoveries in the fields of chemistry, engineering, plastics, electronics and possibly atomic power to textile manufacturing processes.

Also, a revolution is taking place in cotton agriculture what with the development of picking machinery and other mechanical devices that point to ample supplies of the white fiber at prices competitive with the rest of the world.

But these impending changes can be made effective only by men of sound training, equipped by schooling and experience to master the scientific knowledge of their time and translate it into terms of textile processing. Men of this sort will be the direct heirs of a great tradition that began back in the late 18th century when men of the type of Hargreaves, Arkwright and Slater applied Watt’s discovery of steam power to the operation of spindles and looms and launched the industrial revolution. Also, among this noble company must be included Eli Whitney who not only invented the cotton gin but was the father of mass production.

The mechanization of cotton cultivation, the application of chemical discoveries to the production and finishing of both yarns and fabrics and the development and perfection of new mechanical devices for mill operations are the immediate tasks of the industry. To these must be added the long-range problems of keeping pace with the dynamism of the American industrial and economic structure, of finding new outlets for the products of mills and of anticipating the needs of the customers of the industry.

Given the present high level of textile education in the United States, the cotton textile industry has every reason to feel confident that the textile technicians and textile scientists now being trained will fulfill the mighty work ahead of us.
Deering Milliken Research Trust

By H. R. VALERIUS

Here in the Clemson College School of Textiles one can readily see that research is being conducted by the textile industry. Government experiments have been carried on here for quite a long time. About a year ago, the Deering Milliken Research Trust was established in the modern textile building of this school. This Research Trust is under the direction of Dr. Donald G. C. Hare.

Dr. Robert F. Poole, President of Clemson College, has long expressed a desire for additional research by the textile mills in this area and by the Clemson Textile School.

The Deering Milliken Company, which controls a group of textile mills throughout the country, has a research laboratory in Connecticut in addition to the one here at Clemson, South Carolina. Each of these laboratories has a staff of about forty, consisting of Mechanical and Electrical Engineers, Chemists and Physicists, all applying their skills to textile problems.

There were several determining factors for locating the Research Trust at Clemson. Not only is the South becoming increasingly important to the textile industry, but also Clemson is near many of the Deering Milliken mills, and it was felt that the school and the laboratory could be of mutual assistance. From time to time, the professors of the school are called upon as consultants. Some of the advanced students are hired for part-time work which provides both employment and invaluable experience.

Dr. Norman C. Armitage, assistant director and patent counsel of the Trust, stated that because of the relatively short time that work has been underway here, no startling results have been produced, but that many improvements have been developed. Research is being conducted in such basic categories as fiber construction and measurement, and on tables for the effect of humidity in the different processes.

Research for tangible savings has been done in connection with sizing. A certain amount of size is necessary in processing yarn for the production of cloth. If the percentage of size is reduced, difficulties arise. Size is an expensive item to a large textile mill; therefore, if the amount of size can be materially reduced or eliminated without a decrease in the quality or quantity of the product, a substantial saving for the mill will be realized.

The economical spinning of rayon presents a problem for long range study. Cotton and woolen fibers have been utilized by civilization for many thousands of years, and the machinery used in making fabrics from these materials has been developed, improved and standardized through these thousands of years. Rayon and synthetic fibers of other types have been known for but a relatively short period of time. Because there was no known machinery for the processing of these new chemical filaments, the existing cotton and woolen machinery had to be used, even though there existed such basic differences in the physical characteristics of the synthetic and natural fibers. Consequently the endless filament had to be cut or broken into staple, parallel and then made into an unbroken thread again. Only now is research in the development of machinery for processing these synthetic fibers beginning to catch up with the advancements made in the production of new chemical filaments.

In a brief discussion with Dr. Hare, he gave the following information concerning some of the work being done:

"The laboratory is developing a method of spinning the continuous filament rayon directly into yarn without necessitating the normal processes encountered in handling staple fibers."

"An extensive chemical program is being carried on. A long range program toward the improvement and standardization of wool finishing has been underway for about a year. Investigations in the finishing and shrink-proofing of rayon, particularly from fabrics made from the special yarn spun here, is the subject of a major project, as are or—her specialized problems having to do with the handling of other synthetic fibers."

Private research laboratories of this type are not the... (See page 23)
One of the South's, as well as the nation's, most pressing problems is the elimination of labor-industry disturbances as a means of settling disputes that arise in industrial relations. If one could gaze into a crystal ball and see the best methods of solving this problem, he would have both management and labor paying homage to him.

But alas! There is no one who can with absolute certainty speak. There are many who have and will come forward with a suggestion—maybe some will dare to say that theirs is the only answer. Perhaps there is no one answer. Maybe the problem can only be solved by a combination of approaches.

Be this as it may, the writer's experience with the War Labor Board and in general arbitration work for some years has convinced him that management and labor in the South must learn to make collective bargaining work on a voluntary basis if there is to be any cessation of this continual wave of strikes and lockouts. Precious time is wasted when a governmental agency, or some one else, is called in to help settle a dispute which could have been settled by the parties themselves either by conciliation or by a third party on a voluntary arbitration basis. These means of settling disputes are typically American and imply no compulsory features as do some methods which might be employed.

Voluntary arbitration means collective bargaining and this means unions. The South has long been anti-union, but this is not as true today as it was ten years ago, and all the blame or credit (depending upon your viewpoint) cannot be attributed to any or all government legislation. Public opinion in the South is changing. Such cities as Atlanta, Birmingham, New Orleans, Mobile, Dallas and Houston are reasonably "friendly" to unions and there are at least 30,000 CIO members in Memphis. This is the city in which, you will remember, its political boss, Mr. Crump, stated that the CIO "would never be allowed to light."

Another factor changing the South's traditional attitude is the fact that the South has already been "cracked", and that many men and women returning from war industry to prewar jobs are convinced of the value of union backing in industrial disputes.

Other union partisans have been found in some war veterans who, although glad to be home, are impatient with the "status quo" and are willing to set off a firecracker by whatever means at hand.

The primary factor in breaking down the anti-union attitude of the South has been the work of the unions themselves. More brains and energy have been expended in an unceasing flow to propagandize this area. The hard-boiled, tough-fisted labor leaders of yesterday have given way to the persuasive, "smooth talking" leaders of today.

Even now the AFL and CIO are putting forth great organizational drives in the South. The AFL boasts of over two million members in their Southern membership. More than a quarter of a million have been signed since (See page 22)
Trainees in the fiber analysis laboratory at Clemson witness a demonstration of the use of the Pressley Flat Bundle Fiber Strength Tester. Demonstrator is Helen G. Beasley, Fiber Technician of the Cotton-Textile Institute, Inc.

FIBER ANALYSIS LABORATORY

By H. R. VALERIUS

There are many people who do not know that classes for women, as well as for men, are offered in the Clemson textile building. Since October 1944, the Cotton-Textile Institute’s Division of Technical Service, directed by John T. Wigington, has been conducting classes for training cotton fiber technicians in its cotton fiber testing laboratory in the textile building at Clemson College. This training program is unique in that it is the only one of its kind in the country.

The program was originally established as a research project for the Institute’s member textile companies and was later modified to include the training of laboratory technicians. Since the inauguration of the training project, slightly more than two years ago, sixty-five technicians have been trained.

The classes at the laboratory are designed to train the laboratory workers of cotton mills to become experienced in cotton fiber testing. Many cotton mills have found it to their advantage to maintain fiber research laboratories which enable them to know more about the cotton they are using than the usual grade and staple length classification. By conducting tests to determine the fiber length, fineness, maturity and strength, a product of better quality can be obtained.

As stated in a Government report, “The staple-length designation of a sample of cotton, as determined by customary classing methods, indicates the length of a “typical portion” of the fibers in the sample. Uniformity of fiber length, as well as other fiber properties, probably influence to some extent the classer’s selection of the “typical portion” of the fibers upon which the staple length designation is based. In general, there is a fairly close relationship between the staple length as designated by the classer and the fineness and the strength of the yarn that can be manufactured from the cotton. These relationships, however, are influenced by other fiber properties, the more precise measurement of which requires special laboratory equipment and techniques.”*

Cotton mills from Maine to Alabama have sent employees to the Clemson laboratory for this training. The course requires from eight to ten weeks of study and practical application of fiber analyses.

Entrance requirement for the students is a high school education. Previous laboratory experience is not necessary, although it is advantageous. The test methods and procedures developed by the Cotton Fiber Technicians of the Department of Agriculture have been employed as the basis for the Institute’s fiber training program.

Members of the Cotton-Textile Institute may enroll their employees in this course free of charge. Helen G. Beasley, Fiber Technician for the Institute’s Division of Technical Service, is in charge of the training program.

Some men have taken advantage of the training; however, in each class a majority of the students are women. Laboratory managers have found that girls are usually

(See page 23)

"Results of Fiber and Spinning Tests of some Cottons grown in Texas and Oklahoma, crop of 1943." Prepared in the Research and Testing Division, Cotton and Fiber Branch, Office of Distribution, U. S. D. A.

THE BOBBIN AND BEAKER
Doctor Hugh Monroe Brown was named Dean of the Clemson College School of Textiles in September 1945, succeeding at that time Professor Robert K. Eaton, who had been serving as Acting Dean of the school since February 1943.

In addition to his duties as Dean, Dr. Brown is Head of the Textile Management Department.

Dr. Brown was reared on a farm in Duell County, Nebraska. He received his A. B. and M. A. degrees from the University of Denver in 1920 and 1921, respectively. He was a teacher of mathematics in the Denver city high schools from 1922 to 1923. He then taught as a Fellow in Physics at the University of California from 1923 to 1927, at which time he received his Ph.D. degree in Physics from that institution.

It was also in 1927 that Clemson College received one of its most capable professors. From 1927 to May 1942, Dr. Brown served as Professor of Physics in the college’s Physics Department. He was made head of this department in 1940, serving in this capacity until his succession to the deanship of the textile school. During this period, the professors of the Physics Department made equipment for the department, that was valued at $10,000. This represented the saving to the college of a large sum of money to be used for other purposes. Dr. Brown was granted a leave of absence from 1942 to 1945, during which time he worked on radar research at the Massachusetts Institute of Technology.

Here at Clemson, Dr. Brown is a member of Phi Kappa Phi, Sigma Phi, the Fellowship Club, the Forum Club, and Phi Psi, in which he has shown much interest.

Dr. Brown has also expressed a great amount of interest in the school’s research program. He has extensively expanded the facilities for this purpose and has assumed an active role in the inauguration by the school faculty of several research projects. Dr. Brown is especially interested in the development and perfection of equipment for testing purposes.

Professor Eaton capably served the Clemson Textile School as Acting Dean for two and a half years after he succeeded Mr. H. H. Willis. He had the difficult task of solving the problems encountered by the school during the war. Professor Eaton is Head of the Carding and Spinning Department.
Your Camera and the Textile Industry

By JAMES K. WAITS

The camera is one of the most versatile tools the textile man has available for his use today. The advertising agencies have used it in many ways. This is clearly illustrated by the many beautiful pictures, in both black and white and color, which appear in the current issues of several magazines. The widespread appeal of pictures to the general public is clearly shown by the rapid and continuing success of such picture magazines as Life, Look, and Pic.

In the research laboratory, the camera is becoming more and more an indispensable piece of equipment. This is especially true in a laboratory, such as the textile laboratory, where the microscope is used extensively. The camera is being used most effectively in the mills and plants to show machinery set-ups, lighting conditions, etc.

There are many men in the textile industry who are amateur photographers. This article is addressed primarily to these men. Besides paying for that new equipment you may wish to buy, you will derive many hours of pleasure from recording some of the many phases of your profession. But first, a few words of warning. Although you legally own such negatives as you may expose, unless it is specifically stated otherwise, you may not publish pictures of such property as you may photograph unless you have permission from the owner. If you are taking a picture to be used in advertising, be sure to secure signed release from the models appearing in the picture. However, if, at the time the picture is being made, the parties included in the photograph are aware that it is being made for publication, not for advertising purposes, however, no release is necessary. It is a good idea to make an announcement to the effect that such pictures are being made for publication and allow all who wish to do so to move out of the picture area.

The photographs which accompany this article were made at Goldville, S. C., and show various stages of construction of the new addition built for the Joanna Textile Co. If there is construction work of any type going on around the plant where you are employed, make a photographic record of it. If you are capable of producing good results, the chances are that the management will very gladly buy them from you. No elaborate array of equipment is necessary to produce good results. It is not the camera that makes the picture, but the man behind the camera. One well known photographer who specializes in figure shots of dancers, uses the familiar box camera, exclusively.

It is not necessary that you do your own processing, although it will be much cheaper and will increase the pleasure in your hobby. There are many capable finishers in the United States, and one is probably located near your home. If you wish, you may set up your own darkroom. Surprisingly little space is needed. The author has a darkroom in a small closet. This closet is about three by six feet in size. Shelves were built in both ends. In one end there is a shelf about three feet square and about waist high upon which the enlarger is placed. Above and below this shelf are others, of narrower width, used for the
storage of paper, film, etc. In the other end is a shallow sink in which the processing is carried out. Below the sink is a rack holding the trays and tanks. It has been in use since about 1935, and the aerial shot on this page was processed and printed in this darkroom. The other two photographs were made by W. W. Waits of Goldville, a second hand in the spinning room.

The aerial shot is one that could have been made by any experienced amateur. The camera, a German Ica, was originally purchased from its "liberator" for thirty dollars. The lens is a 5 inch, f 44.5 in a Compur shutter. A $3 \frac{3}{4} \times 4 \frac{3}{4}$ Super XX film pack was used. The picture was taken around four o'clock in the afternoon and the exposure was 1/150 at f 11. The plane was a two seat Piper Cub. The picture was shot from the rear seat and through the plastic windows which should be avoided if possible. These windows are not optically corrected and a slightly blurred picture is almost sure to result.

There are a few precautions to be observed when taking pictures of this type. Use as large a negative as possible. If your camera is of the type having a bellows, protect it from the slip of the ship with a rigid shield attached around the bellows. This shield may be made of light metal or heavy cardboard. Otherwise, "bellows' flutter" will result in blurred and fuzzy pictures. A light yellow filter, such as the K-2, is often necessary to cut through the atmospheric haze. Use a high enough shutter speed to eliminate a possibility of subject motion.

The other illustrations are the type more in the reach of the average amateur photographer in the textile field. These pictures were made with a $2 \frac{1}{4} \times 3 \frac{1}{4}$ Speed Graphic, but they could just as well have been taken with almost any camera.

Photomicrography is another field open to the men who have access to a microscope. Where work of a purely technical nature is considered, such as in a research laboratory, professional equipment should, of course, be used. However, if this equipment is not available, a picture may be obtained by tilting the microscope so that the draw tube is horizontal and blocking up the camera, practically any kind will do, so that the optical axis of the microscope and the camera are the same. This is a rather makeshift method. A vertical stand, such as that used for vertical enlargers, or a heavy ring stand from the laboratory, is more convenient to use. The camera may be attached to the stand by means of a wooden block and a 1/4 inch bolt with 20 threads to the inch. This size bolt fits the American type tripod socket.

A compound microscope is generally designed so that the image is viewed at infinity, i.e. the rays of light are parallel to the eyepoint. Therefore, with the camera focused at infinity it will "see" the same thing as the human eye when an observer looks into the microscope. It has been found that most people strain their eyes when looking into a microscope, so it is best to focus the camera at about 25 feet. The camera should be so adjusted that the eyepoint of the microscope falls in the center of the front surface of the camera lens. The regular illuminating system used with the microscope is used for the photographs. The exposure is best found by means of test strips. For example, if you have a roll film camera, select an average subject such as you will be photographing and make a series of exposures over as wide a range as is practical with the film being used. After the film is developed, select the best negative and use that exposure. It is best to start working with the low magnification objectives of the microscope. For a more complete discussion of photomicrography, it is suggested that the reader consult one of the standard reference books such as the one published by the Eastman Kodak Company, Rochester, N. Y.

Only a few examples are covered in this short article. There are many more that will suggest themselves to the individual. Only the main points have been covered in the examples shown. There are many books that have been published for the beginner and the advanced amateur. If more complete or technical advice is needed it is suggested that the reader consult such photographic books as are available.
Looking Back

Nineteen forty-six marked the fiftieth anniversary of Clemson’s School of Textiles, the first textile school to become associated with a regular college. These have been fifty years of genuine progress, not only within the school itself, but in the industry and in the state as well.

When the Clemson Textile School was established before the turn of the century, the South was just beginning its program of industrial expansion. Since that time, the population of the state has increased about 45 per cent, the number of textile employees has increased more than two hundred per cent (although the production of cotton now is actually less than in 1896), and the number of looms has increased about 630 per cent. Surely graduates of the Clemson Textile School have played no small role in this tremendous expansion of the industry in South Carolina and elsewhere in the South.

The school has not stood by silently during these years of industrial growth. When the school was first established, improvements and modifications in manufacturing processes came almost entirely from within the mills themselves. Today, with the cooperation and financial assistance of the industry, the textile schools of the nation are playing a far greater role in the technical progress of the industry. The Clemson Textile School has for many years worked with the mills in this section, giving assistance through counseling and testing service when problems were encountered in the mills.

There is no definite method of evaluating the assistance which the school has been able to give. However, these intangible results have been recognized by the industry, a fact readily seen in the establishment of the J. E. Sirrine Textile Foundation, in which the cooperation of leading textile concerns in South Carolina was obtained.

Probably the greatest period of progress for the school was the sixteen years, from 1927 to 1943, during which time Mr. H. H. Willis served as dean. It was largely through the efforts of Dean Willis that appropriations for the present building were obtained from the South Carolina Legislature. Gaining the assistance of several mills in obtaining badly needed equipment for the school can also be credited to Dean Willis. He saw the school grow from an enrollment of about 75 students and a faculty of four in 1927, to an enrollment of 350 students and a faculty of fifteen in 1941. He worked closely with the Textile Foundation, Washington, D. C., in cooperation with which he edited a number of textbooks and laboratory manuals which were written by members of the faculty.

Growth of cooperation with the textile field is seen in the establishment in 1921 of the Cotton Spinning Laboratory of the United States Department of Agriculture, in the textile school. In 1944, the Division of Technical Service of the Cotton-Textile Institute organized its Fiber Analysis Laboratory. Only a year ago, the Deering Milliken Research Trust began research in a portion of the textile building.

The textile school has been supplying a steadily increasing number of well-trained graduates to the industry. A few more than nine hundred men have been graduated since the school was started half a century ago. Of this number, about seventy per cent completed the Textile Engineering course; sixteen per cent were graduated in Textile Chemistry and Dyeing, 9.5 per cent in Textile Industrial Education, and 4.5 per cent in Weaving and Designing. The last two courses are no longer offered by the school.

On many occasions in the past, meetings of various textile organizations have been held in the textile building. Often these meetings have been under the direction of members of the faculty who have been called upon to make addresses and to lead discussion groups.

The school’s growth has been gradual but progressive. At present there are four separate departments within the school: the Textile Management Department, headed by Dean Hugh M. Brown; the Carding and Spinning Depart-

(See page 21)
Looking Ahead

An all time high in enrollment, an enlarged faculty, additional research facilities, more and more cooperation and coordination with industry—with all of these factors in evidence today, the belief of President Robert F. Poole that Clemson’s School of Textiles "will become second to none in the nation" is well-founded.

The outlook is bright. The increasing need for college-trained textile men has successfully brought into being a feeling of mutual helpfulness between the school and the textile industry. This feeling gives added strength to the belief in a solid future for the textile school.

The textile building itself, valued with contents in 1945 in the Survey Report of Public Higher Education in South Carolina, made by the Division of Surveys and Field Services of the George Peabody College for Teachers, at $545,000, and containing fourteen classrooms, twenty-seven laboratories, two shops and a lecture room, is easily capable of accommodating a much greater enrollment and many additional research laboratories.

The establishment of the J. E. Sirrine Textile Foundation has made available a great portion of the funds so necessary in carrying out the proposed projects of the school. Already more than $800,000 has been contributed to the Foundation by the participating mills. It is probable that the Foundation funds will, in part, be used for improving the faculty of the school and for scholarships and assistantships.

Approximately $100,000 for the purchase of machinery either has been allocated by the college or has been provided by the textile industry. At least one type of each machine used in the manufacture of cloth—from the opening through the cloth finishing processes—will be added. Included will be a seven-cylinder rayon slasher, a high speed warper to be used for both instruction and research, a centrifuge extractor, a tenter frame, new package, piece and skein dyeing machines, and other pieces of modern equipment.

NEW LABORATORY

Establishment of a new testing and research laboratory, to be staffed by the school faculty, is being completed. Research under the direction of Dean Hugh M. Brown has already been started.

Both practical and theoretical work will be carried on in the laboratory. Part of this work will be done independently by the school. Some of the work will be in conjunction with mills seeking solutions to specific problems.

New equipment for the laboratory includes a direct reading yarn balance, Taber abrasion tester, inclined plane strength tester, Suter-Webb duplex cotton fiber sorter, and pendulum type yarn strength testers. Some of this and other equipment has been furnished by Deering, Milliken and Co.

Research in the laboratory will not be limited in scope to any specific branch of textiles. Experiments are now being conducted in cooperation with the American Society of Testing Materials on a new type of grab test jaws. New equipment for testing purposes, such as a new tensile strength testing machine of the pendulum type that is practically free of inertia, is being constructed in the laboratory, and tests as to its practicability are being carried out. A search is underway for a new and improved method of sorting fibers, to replace the tedious, time-consuming hand sorting method. Tests on new improvements for looms will soon be carried out by members of the faculty and students of advanced standing.

The school’s laboratory is planning to conduct experimental work on various projects for the Quartermaster Corps. For example, a study of a plasticized cellulose acetate yarn is under consideration.

Cooperation with industry will definitely increase as facilities for giving assistance are expanded. The school has in the past and will continue in the future to work with the South Carolina branch of the Southern Textile Asso-

(See page 21)
The textile industry is experiencing an acute shortage of new machinery at the present time. There have been, however, developments which will improve the textile machinery now in use. The Meadows four spindle band drive has been found to improve the existing band driven spinning frames.

This spinning frame drive has been installed on a 1925 Model C Whitin spinning frame by the members of Professor Gaston Gage’s cotton spinning class of the Clemson Textile School, and the improvements have been noted.

With this drive, it is possible to get practically the same end results obtained from a four spindle tape drive. Assuming that the band drive whorls are uniform, the Meadows band drive gives the same uniform spindle speed as the four spindle tape drive. This uniformity of spindle speed is necessary in maintaining the desired twist per inch.

In addition to maintaining the uniform spindle speed, the Meadows drive eliminates a great deal of friction found where the bands are applied under too much tension by applying the proper amount of tension to the bands through tension pulleys. It has been found that, in starting up band driven spindles after hours of inoperation, the Meadows four spindle band drives will start up with no excessive bands off. The reason for this is apparent since the tension pulleys compensate for any drawing up of the bands due to idleness, or to excessive moisture in the atmosphere.

The tension pulleys used in connection with the Meadows drives are pressed steel, grooved, ball-bearing pulleys. This type of pulley will use a minimum amount of power. Lubrication is required only after five thousand hours, which is about the normal overhauling period for the spinning frame. To apply the Meadows drive to an existing band driven frame, it is not necessary to remove the bog bins, spindles, cylinder or any other part. The pulley is applied to the lower rail, not the spindle rail, by drilling one 5/16 inch hole into the lower rail, and by fastening the pulley bracket with a 5/16 by one inch machine bolt.

The band used has a loop in both ends. The loops are waxed, and the ends are put together with a bronze hook. This, together with the function of the tension pulley, eliminates the use of a banding device or by varying tension on the spindles when the bands are tied by hand.

In summary, the advantages derived from use of the Meadows four spindle band drive are a constant spindle speed which eliminates soft yarns due to band slippage, a reduction of friction on the spindle bolsters, the elimination of wet weather band trouble, and more spindles in production because the four spindle bands will run much longer than the conventional type bands.

**Circulation**

We desire to maintain our free mailing list as up-to-date and as accurate as possible. Also we would like for all of Clemson’s textile graduates to receive future copies of THE BOBBIN AND BEAKER.

You are urged to keep us informed of changes in your mailing address, and to send us the names and addresses of those who wish to be added to our permanent mailing list.

Address: Circulation Manager, THE BOBBIN AND BEAKER, Clemson College, Clemson, S. C.

**Junior Staff**

The May issue of THE BOBBIN AND BEAKER will be edited by a staff composed of members of the Junior Class. This staff will be named in the March issue.

More Juniors are needed to work with the Juniors who are already on the staff. They are urged to come out as soon as possible.

THE BOBBIN AND BEAKER
Textile Deans Meet


The Philadelphia Textile Institute sponsored the conference. Dean Malcolm E. Campbell of the North Carolina State College of Textiles presided.

Placement problems of textile schools were discussed, and it was revealed that the textile industries present demand for trained manpower from the schools is approximately fifteen times above the number of graduates available. It is estimated that it may require five years before the educational end can fulfill the requirements of the industry.

Two hundred fifty students are expected to graduate this year from the ten textile schools in the country. This number is slightly less than ten per cent of the overall enrollment of 2,700 students. At least 3,500 "qualified" applicants had to be turned away from the nation's textile schools. It was also disclosed that between 75 and 80 per cent of the incoming freshman classes are veterans.

The Council brought out the fact that one of the greatest hindrances to the educators is the acute shortage of machinery that now exists.

Much of the discussion at the meeting was devoted to the cotton research plan of the Government, and the textile school representatives indicated a willingness to undertake some of the work of the project through contractual research. Under the enabling bill, or Public Law 773 which is often referred to as the enabling bill, a fund has been set up for agricultural research, of which a part will be devoted to cotton. The National Council is now on record as making available for the cotton study the facilities of their institutions.

At the meeting, members of the Council adopted an important resolution, calling for "participation with the textile division of the American Society of Mechanical Engineers in bringing about closer cooperation between the textile industry and the textile colleges in order to advance and make more useful the general textile educational system."

Dr. Hugh M. Brown, Dean of the Clemson College Textile School, attended the meeting. Other textile institutions' representatives include Dean Campbell; Leslie B. Coombs, Principal of Bradford Durfee Textile Institute; Richard I. Cox, Dean of the Philadelphia Textile Institute; Herman A. Dickert, A. French Textile School, Georgia Institute of Technology; William D. Fales, Head of the Textile School, Rhode Island School of Design; Kenneth R. Fox, President of Lowell Textile Institute; E. E. Parsons, Head of the Department of Textile Engineering, Texas Technological College; and George Walker, Principal of New Bedford Textile School.

Enrollment

An all-time enrollment high in Clemson's Textile School was established in September 1946 when 492 students registered for classes in the three courses offered by the school. These men represent approximately eighteen per cent of all students enrolled in the nation's textile schools.

Some of the effects of World War II on enrollment in the textile school can be seen in the graph above. The full force of the demands for men for the armed services did not strike until the close of the 1942-43 session, when enrollment skidded more than ninety per cent.

The school's pre-war record enrollment, not shown in the graph, was in 1941-42, when 350 students were majoring in textiles and when Clemson's Textile School enrollment of day students exceeded that of all other textile schools in the country. Presently, the school is second in the nation in this respect, exceeded only by North Carolina State College Textile School.

Percentages shown in the graph represent the per cent of all students at Clemson enrolled in textile courses. Distribution of textile students among the several courses is also shown.

Of the 492 students at the present time, there are 183 freshmen, 155 sophomores, 84 juniors, 65 seniors, and five special students. It is interesting to note that there were no seniors in the textile school during 1943-44.
New Professors

By R. F. SHERIFF

The Textile School of Clemson College extends a hearty welcome to the six new members of the faculty announced by Dean Hugh M. Brown at the beginning of the fall semester. Three of these men are recent graduates of the Clemson Textile School and are well known by those who were here before the war. A fourth is a Clemson graduate of ten years ago.

The school is also pleased to have back Professor William E. Tarrant, Jr., and Professor John V. Walters, who have recently returned from military leave.

ARVID CZARNITZKI

Professor Czarnitzki received his A. B. degree in science from Newberry College in 1923, and his M. S. degree in Chemistry from the University of South Carolina in 1936. Professor Czarnitzki was associated with the Columbia city schools for sixteen years, teaching in various schools of that system. During the three years prior to his coming to Clemson, he was with the Tire Cord Division of the American Viscose Corporation in Front Royal, Virginia. He held several positions while with this company; his work included the direction of training and supervision of junior chemists.

Professor Czarnitzki now serves as Assistant Professor of Textile Chemistry and Dyeing.

JOHN S. GRAHAM

Professor Graham, who now holds the position of Instructor in Research and Testing, received his B. S. degree in Textile Engineering from Clemson College in 1943. During the three years following his graduation, Professor Graham held a position with the United States Department of Agriculture in its cotton testing laboratory at Clemson.

Professor Graham was appointed to the faculty of the textile school in July 1946. In addition to his duties as an instructor, he also assists in the textile school's research laboratory.

LACONLA H. HANCE

Professor Hance, member of the class of 1944, received his B. S. degree in Textile Engineering from Clemson in 1946. He immediately accepted an appointment to the faculty of the textile school as Instructor in Weaving and Designing.

While at Clemson, Professor Hance was a staff writer for THE BOBBIN AND BEAKER. He was also a member of the "Y" Cabinet and the glee club. He is a member of Phi Psi, Phi Kappa Phi, Tiger Brotherhood, Strawberry Leaf, Phi Eta Sigma, and Alpha Phi Omega.

Prior to his return to Clemson for graduation, Professor Hance served in the United States Army. He saw active duty in the European Theater of Operations and was discharged as a Captain in the Infantry.

MORRIS D. MOORE, JR.

Professor Moore, or "Doc" as he is better known by his many friends on the campus, received his B. S. degree from Clemson in 1943 with a double major in Textile Engineering and Textile Industrial Education. In his senior year, he was listed in Who's Who Among Students in American Universities and Colleges. He is a member of Phi Psi and was Editor-in-Chief of THE BOBBIN AND BEAKER in 1942-43. He is now faculty adviser of this publication.

Immediately after graduation, Prof. Moore entered the army, where he saw service in the European Theater of Operations. While in England, he attended Shrivenham American University, located near London. There he studied education under Sir Fred Clarke, outstanding English educator. He was discharged in 1946 as a First Lieutenant.

Professor Moore joined the faculty of the textile school in July 1946 as Instructor in Textiles.

(See Page 22)
Plant Safety Discussed at Recent Meeting

By A. M. HAND

NOTE: We are aware that the material herewith has been highly publicized in textile magazines throughout the nation; but due to the fact that few students subscribe to these magazines, we are printing for their benefit the highlights of this meeting.—The Editor.

The fall meeting of the Southern Textile Association’s South Carolina Division was held in the Clemson College textile school building on October 5, 1946. Represented at this meeting were two hundred or more operating executives, including approximately thirty officials in charge of safety and personnel work. The entire meeting was for the study and discussion of plant safety programs.

J. B. Templeton, superintendent of the Brandon Corporation’s Poinsett Mill at Greenville, S. C. presided. He was assisted during the first half of the meeting by J. L. Adams, superintendent of Beaumont Manufacturing Co. at Spartanburg, S. C., and during the second half by Newton G. Hardie, general manager of the Laurens (S. C.) Cotton Mills.


Mr. A. C. Phelps, in describing the Accident Prevention System of Brandon Corporation, outlined briefly the procedure used in establishing this system: first, stressing to the supervisory personnel the importance of preventive measures; second, examining and systematically recording the knowledge and experience of others. This system proving capable of reducing accidents, its bases are outlined briefly as follows:

1. “Accidents are caused—they don’t just happen.
2. Eighty-eight per cent of the accidents are caused by human factors, twelve per cent by mechanical factors, mainly. About two per cent are unavoidable by the use of ordinary precautions.
3. The same cause that produces a relatively minor injury, such as a broken finger nail, may also result in such major injury as amputation of a finger, hand or arm, or even death.
4. Prompt and efficient first aid is absolutely necessary to prevent infections with their train of lost time and permanent injury.
5. Certain safety rules are necessary for control of personnel causative factors.
6. Decrease in accidents is invariably accompanied by increase in quality and quality of production and, therefore, by decreased cost of production in addition to decreased cost of accidents themselves.
7. The best way to engender safety consciousness in employees is to show them by positive action that you intend to remedy dangerous conditions immediately as they are reported.
8. Persons failing to observe ordinary precautions or safety rules in their work should not be reprimanded in such fashion as to engender resentment, but should be sold upon the value of safe working habits to themselves, their families, and other workers; but such persons as resist unduly this process simply have no place in the organization.
9. Some persons are naturally accident-prone, by reason of lack of judgment or physical factors or bad living habits. These must be eliminated.
10. Accident prevention is definitely an every-minute part of production, and as such is the natural responsibility of each supervisory person.
11. The time to investigate any accident is as soon as possible after it occurs, before recollections have a chance to change.
12. While efficient production is the end of any industrial organization, safety in production must be its policy if operations are to continue successfully over long periods of time.
13. The pronouncement of policy in safety is a function of top management, and final responsibility for each and every injury rests upon the same.
14. Supervisors are entitled to systematic and accurate records and analyses of the same from the staff organization as an aid to production and accident prevention, enabling them to spot bad conditions or bad work habits with minimum time and effort on their part.
15. The most efficient way to conduct any operation is invariably the safest way. Therefore study of processes or operations by the staff is necessary, in conjunction with the supervisor, so as to further efficient and safe production.”

This system speaks for itself as the cost after the system was put into effect dropped from $2.94 per thousand man-hours for the year 1943-1944 to $2.30 to date.
CHAPTER REORGANIZES

Iota Chapter of Phi Psi, national honorary textile fraternity and oldest on the Clemson campus, having been chartered in 1927, has once again assumed its important position among campus organizations and in the lives of textile students. For three years during the war, the number of active members was reduced to such a point that activities on a chapter scale had to be abandoned. Last spring, when enrollment in the textile school increased from 54 to 244, three veterans, F. J. Hawkins, J. R. Hunter, and E. T. McIlwain, undertook to reorganize the chapter.

After due initiative measures had been administered, nine new members were admitted in April, 1946. They were J. B. Lowman, W. B. Greyard, Jr., W. O. Ruddock, J. R. Clark, Jr., A. K. Wood, W. E. Broadwell, W. D. Clark, Jr., J. C. Simmons, and D. W. Walker. Their formal initiation was concluded in the presence of Harold C. Wood, Grand Council President, and Harold H. Hart, one of the five Philadelphia Textile School students who founded Phi Psi on March 18, 1903, and now Grand Executive Secretary, at the third degree rites. Mr. Hart gave a talk on the accomplishments and history of the fraternity.

The annual chapter banquet was held in Greenville a short time later. Professor Robert K. Eaton gave an interesting talk to the group, which included many Phi Psi alumni members from Greenville and vicinity and a number of professors. In his address, Professor Eaton outlined the projects he considered most important for Phi Psi to undertake during the coming years. One of these was the reorganization of THE BOBBIN AND BEAKER.

During the course of the banquet, E. T. McIlwain was elected President for the current school year. He succeeded F. J. Hawkins, who was graduated during the summer. Other officers chosen were W. D. "Chip" Clark, Vice-President, J. R. Clark, Secretary-Treasurer, W. B. Greyard, Senior Warden, and W. E. Broadwell, Junior Warden.

During the summer of 1946, six more initiates were taken into the chapter. They were N. S. Anderson, T. E. Christenberry, R. E. Chandler, N. E. Garvin, W. M. Greer, and A. E. Williams. Shortly after the third degree, a turkey supper was given for these new members and for faculty members and their wives.

The chapter reached pre-war strength in the fall, with the return to school of several old members and the initiation of eleven new members in November. These new members were J. C. Austell, R. E. Christenberry, R. R. Crowther, L. S. Croxton, M. D. Heaton, L. F. Mcmakin, G. P. Robinson, H. R. Valerius, J. F. Webster, W. C. Whitten, and R. B. Willey.

Twenty-five of the 26 new members taken in since the war are veterans.

Another group of initiates will be admitted prior to the annual banquet this spring.

THE BOBBIN AND BEAKER

Although THE BOBBIN AND BEAKER is a publication of the textile students, much credit is due Iota Chapter of Phi Psi for making possible this and succeeding issues. Largely through the efforts of E. T. McIlwain, President of the chapter, and Professor M. D. "Doc" Moore, Jr., Phi Psi alumnus and Editor of THE BOBBIN AND BEAKER in 1942-43, is publication resumed.

Phi Psi earnestly trusts that the necessity of discontinuing publication will not arise in the future. Rather it hopes that THE BOBBIN AND BEAKER will continue to advance and expand in whatever direction its readers desire.

Although a fall issue had been contemplated when reorganization was being effected, we are glad that a start has now been made, and we, too, believe that it's better late than not at all.

Phi Psi will continue to cooperate with THE BOBBIN AND BEAKER, and the incentive of its members will always be available to it.

WHO'S WHO

Four members of the chapter have recently received the honor of being chosen for Who's Who Among Students in American Universities and Colleges for 1946-47. Among the twenty-three students at Clemson receiving this coveted recognition are W. B. Greyard, E. T. McIlwain, W. D. "Chip" Clark, and L. F. Tigler.

Phi Psi has always been well represented in other important activities on the campus. We of Phi Psi are proud of the achievements of the members listed above.

SPECIAL TRIBUTE

Although this issue is dedicated to all textile students and graduates who gave their lives during the war, Phi Psi wishes to pay special tribute to those who were members of Iota Chapter. The Phi Psi service flag, which was dedicated in 1943, now has eight gold stars among the other 117 blue stars.

Phi Psi is proud indeed of these Brothers who made the supreme sacrifice: Lt. William H. Carson, TE '42; Clifford J. Gormley, TC '39; 1st. Lt. John R. C. Griffin, Textiles '42; Lt. Henry T. Hahn, TE '43; Capt. Henry D.
Leitner, TE '37; John D. McArthur, Jr., TC '40-43; 1st.
Lt. Richard T. Osteen, Jr., TC '41; and Capt. DeWitt J.
Ross, TE '41.

Phi Psi sent forth 115 men into active service, and we
are proud of the enviable record made by each and every
one of them.

The chapter service flag is displayed in the chapter
room and is accompanied by a list of Phi Psi men who have
served or are still serving their country.

The fraternity is hoping to obtain a plaque in memory
of all textile students who gave their lives in World War
II. This plaque, to be placed in an appropriate place in
the Textile Building, would be inscribed with the names of
all these men.

ATTENTION FRESHMAN

It is evident that most underclassmen do not fully un-
derstand the purpose of Phi Psi. Nor are they aware of
requirements for membership.

Often sophomores and juniors approach members, ask-
ing for the same information that should have been pre-
tended to entering freshman.

Freshman are in a most advantageous position to com-
pile a grade point ratio high enough for admission during
later years. Since ratios are inclined to fall rather than
rise from year to year, freshman would do well to concen-
trate their efforts on the making of good grades.

Although emphasis is placed on scholarship, it must
not be assumed that grades alone constitute the entrance
requirements. Character, personality, and those intangible
qualities of gentlemanliness are all important qualifications
for Phi Psi men to possess.

Phi Psi is not only the largest and most respected tex-
tile fraternity, but it is an active one, with alumni chapters
located in key cities throughout the textile sections of the
country. Membership is not just until graduation; it is
for a lifetime. The benefits which belong to the man who
can say, "I am a member of Phi Psi" cannot be overesti-
ated.

Freshmen should begin now to consider what Phi Psi
membership can mean to them. If they will start now,
then they, like others before them, will be in position to
join in the near future.

ALUMNI NEWS

In this space each time, the chapter would like to in-
clude news of our alumni who are now making their way
in the textile world. They must be reminded that active
membership does not cease with graduation, but rather
that membership should become more active when actually
associating with the textile industry.

We are anxious to learn of their activities and achieve-
ments since leaving school; we are especially concerned
about those now returning from the service to civilian life.

We hope, too, that they will wish to continue their re-
lationship with the fraternity and with the textile school.
To a large degree, it will be their support that will make
for a better school here at Clemson.

JANUARY, 1947.

ALUMNI REUNITE

A buffet supper, which turned out to be a lively re-
union of old grads, faculty members, and active chapter
members, was given in honor of Phi Psi alumni immediately
after Clemson's gridiron victory during the annual
Homecoming festivities. Good food and old talk were
the order of the day for some fifty guests at the supper
held in the chapter room.

In addition to a number of professors, students, friends
and wives, there were present alumni Charles R. Howard,
President of Phi Psi in 1942-43, and wife, North Augusta,
S. C.; Ralph P. Sullivan, Slater, S. C.; Lewis A. Walters,
Spartanburg, S. C.; L. C. Harmon, Jr., Concord, N. C.;
Hugh Jameson and wife, Abbeville, S. C.; and Dwight
"Sunshine" Allen, Langley, S. C.

It is hoped that the success of the 1946 "reunion" will
enable the chapter to make the function an annual affair.

GRADS ON FACULTY

Phi Psi is happy to announce the return of two out-
standing members of the chapter, M. D. Moore, Jr., and
L. H. Hance, as instructors in the School of Textiles. Both
are veterans of World War II.

Prof. Moore, who now holds the position of Instructor
in Textiles, is a Textile Engineering and Textile Industrial
Education graduate of 1943. He served as Junior Warden
of the chapter in 1942-43 and as Editor-in-Chief of THE
BOBBIN AND BEAKER. As Faculty Advisor at the
present time, his expert advice and suggestions have fur-
nished the spark that has brought this issue through the
formative stages to this, the published state.

Prof. Hance, who is so ably serving as Instructor in
Weaving and Designing, was a member of the Class of
1944. He was Secretary-Treasurer of the chapter in
1942-43, before leaving for active duty. He returned to
Clemson in 1946, graduating in Textile Engineering last
September. He was immediately added to the school fac-
ulty. Prof. Hance was also on the staff of THE BOB-
BIN AND BEAKER.
The Editor's Page

BACK TO PRESS

With a three-fold purpose in view, THE BOBBIN AND BEAKER once more goes to press. Not since April 1943 have the students of the Clemson Textile School collaborated to edit THE BOBBIN AND BEAKER. Now that World War II is a fading memory, and with enrollment in the textile school at an all-time high, we feel that once again this journal can take its rightful place in the small circle of textile student publications.

THE BOBBIN AND BEAKER, post-war model, will make no immediate material changes. Rather, it will adhere to the policy formed heretofore. In so doing, it purports (1) to present to the mill executive, plant manager and superintendent, to alumni and students of the school, and to others with an interest in the field of textiles, information which may prove beneficial to the profession; (2) to serve as a means of introduction to the Clemson Textile School, and to acquaint others with its activities and accomplishments; and (3) to provide for textile students experience in writing, editing, and, in general, performing the thousand and one tasks which must necessarily be done in putting out such a journal. We are convinced that it is impossible to attempt more at the present time.

There is for us no method of evaluating the results of the aims above. So, to you, our readers, we turn, trusting that you will judge our efforts for us—so that we might know if we have in some way accomplished our goals. Your suggestions, your criticisms—your knowing appraisal—will serve markedly in determining the path of future issues. Only in such a way do we feel it possible for us to do our share in helping to close the steadily narrowing gap between the industry and the textile schools.

We shall endeavor to publish two more issues before the close of the school year, one issue in March, the other in May. Next year and in the years to come, there will probably be four issues during each school year. Reorganization difficulties made that impossible this year.

As in previous years, the practice of sending out THE BOBBIN AND BEAKER free of charge will be continued.

Since much time has elapsed since the last issue, and since so many changes have taken place within the school, this issue is devoted largely to acquainting the public with the school. Some phases of activity not covered in this issue will be included in future issues.

Future issues will be devoted to a much greater extent to reporting information of a more technical nature. This may consequently result in less student participation since, in such articles, college theory must be greatly supplemented by the actual mill experience.

The discontinuance of publication in 1943 naturally resulted in a loss of valuable experience. This loss is plainly evident at the present time. We trust, therefore, that THE BOBBIN AND BEAKER is now commencing a long period of uninterrupted publication.

—W. E. B.

ACKNOWLEDGEMENTS

We gratefully acknowledge the assistance and cooperation given us for this first issue. We are most grateful to Dr. Clodius T. Murchison for his guest editorial, and to Dr. James E. Ward for his article, "Operation Dixie."

We appreciate the cooperation of Mr. John T. Wiggins, Director of the Division of Technical Service of the Cotton-Textile Institute, Inc., who has long given his whole-hearted support to THE BOBBIN AND BEAKER.

We thank Prof. M. T. "Doc" Moore, Editor-in-Chief of this journal in 1942-43, who, as our Faculty Adviser, has given much of his time, experience and suggestions to help make this issue possible.

We are indebted to Dean Hugh M. Brown for his kind support and assistance.

We owe special thanks to Iota Chapter of Phi Psi, which founded THE BOBBIN AND BEAKER in 1939 and which was responsible for our reorganization late last year.

Our thanks, too, are due the professors of the textile school, and the small group of students who have given their all for THE BOBBIN AND BEAKER.

Finally, but not least, we thank our advertisers, without whom we could never have gone to press.

—W. E. B.

YOUR HELP

Thus far response to pleas for assistance and suggestions has been most gratifying. A continuation of this cooperation will be needed in the future if success is to be ours.

We are anxious to establish a "Letters to the Editor" section and a column devoted to the activities of our graduates now working in the industry. Your assistance will be necessary if either of these hopes is to materialize. Also, we urge the contribution of material which is suitable for publication.

To those of you who do not call yourselves writers, we heartily recommend at least a part-time journalism career.
LOOKING BACK
(Continued from page 12)

tement, headed by Professor Robert K. Eaton; the Weaving and Designing Department, headed by Professor Arthur E. McKenna; and the Textile Chemistry and Dyeing Department, headed by Professor Joseph Lindsay, Jr.

The school has an active chapter of Phi Psi, national honorary textile fraternity. Iota Chapter was chartered in May 1927, and one of the chapter’s charter members, Prof. Dan P. Thomson, presently serves as Assistant Professor of Carding and Spinning.

THE BOBBIN AND BEAKER was organized in November 1939. The first issue appeared in March 1940.

It is impossible to enumerate the individual achievements of members of the faculty and of the more than nine hundred graduates, most of whom are now active in the textile field.

LOOKING AHEAD
(Continued from page 13)

ication. Problems from surrounding mills are constantly referred to faculty members for their expert advice and opinions.

Dean Brown and others of the faculty have shown such interest in physical research, which the new laboratory will accommodate, that accomplishments of great importance to the textile industry are expected as a result of their work.

Under the direction of Professor Joseph Lindsey, Jr., research in the dyeing and finishing of cotton and the newer fibers will be extended as equipment becomes available.

CURRICULA CHANGES

Introduction of a new Textile Engineering course, for the first time providing for the necessary amount of engineering work, was made last September together with other important changes in the textile school’s curriculum. The new Textile Engineering course provides for thorough training in both textile and engineering principles and practice, with engineering emphasis being placed on machine design, mechanism, metal processes, direct and alternating current circuits and machinery, static, kinetics, and heat power.

With the necessary modifications, the former Textile Engineering major has been renamed Textile Manufacturing. In this course, additional stress will be laid on textile management, particularly on textile costing, time study, and physical textile testing. Only slight changes in the course in Textile Chemistry have been affected. The course in Textile Industrial Education has been discontinued.

By far, the most noticeable changes in courses offered by the school are in the Textile Management Department. Courses in costing and time study have been greatly extended. Physical textile testing has been strengthened and combined with the course in microscopy. These and other curricula changes, which were made throughout the college at the same time, will affect all students who have completed not more than three semesters at Clemson. How-

ever, all other students may elect to pursue one of the new curricula in lieu of the old.

The possibility of offering graduate degrees in the Textile School in the near future is by no means remote. When the staff and facilities are available for the necessary work, a graduate school will be instituted. It is probably a matter of but a few years before such work will be well underway. Other schools on the campus are in a similar position.

Already the school’s enrollment has reached a new peak, with 492 students registering for textile courses last September, making the school second in the nation in this respect. The new high tops by almost a hundred and fifty the previous record enrollment of 353 students in 1941. A breakdown of the students by classes show 183 freshmen, 155 sophomores, 84 juniors, 65 seniors and 5 special students. By courses, there are 214 students enrolled in Textile Engineering, 128 in Textile Manufacturing, 45 in Textile Chemistry and 5 special students. Enrollment for the February semester is expected to be even greater than at the present time.

Professor John S. Graham at work in the new textile school laboratory.

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JANUARY, 1947.

TWENTY-ONE
NEW PROFessors
(Continued from page 16)

JAMES H. LANGSTON

Doctor Langston received his B.S. degree from Stephen F. Austin State College, located at Nacogdoches, Texas, of which he is a native. He did his graduate work at the University of North Carolina, where he received his M.S. and Ph.D. degrees in Chemistry. While there he held a teaching fellowship in Chemistry.

Prior to his coming to Clemson, Dr. Langston was associated with the research laboratory of the Columbia Chemical Division of the Pittsburgh Plate Glass Company. While with this organization, he did research in the field of plastics.

Dr. Longston has served the school as Associate Professor of Textile Chemistry and Dyeing since September, 1946.

THOMAS A. HENDRICKS

Professor Hendricks received his B.S. degree in Textile Engineering from Clemson in 1937. Upon graduation, he became associated with the Goodyear Mills for which he worked three years. He next accepted a position with the Alice Manufacturing Company.

During the war, Professor Hendricks was a textile inspector for the United States Government. In July 1946, he accepted an appointment to the faculty of the textile school as Instructor in Textiles.

"OPERATION DIXIE"
(Continued from page 7)

last May. Incidentally, the major objective in this Southern drive, other than an increased membership, is "to encourage and bring to public attention" a policy calling for voluntary arbitration in labor-management disputes.

The CIO, too, has its "Operation Dixie". Their objective is a million new members and a "fair to medium conquest of public opinion". This union has 350 organizers in South Carolina, Georgia and Alabama who are not only born and bred Southerners, but 95 percent of them are veterans. Neither of these facts just happened. A million dollars will be spent in their campaign with another million available if needed.

The CIO does not claim as large a Southern membership as the AFL. At present the CIO puts its number in the South around 300,000, virtually all of whom are in manufacturing industries.

With eighty per cent of the textile industry in the South, the CIO's first objective is this industry. At present it is a prosperous industry and seems to be headed for several years more of prosperity. Good times, contrary to popular opinion, are the times which are most advantageous to the spread of union membership.

The Textile Workers Union of America (CIO) will be the union to work the textile field. It has 125,000 Southern members with a potential membership of 625,000. This is an efficiently organized union and is headed by one of the ablest unionists in the United States, Emil Rieve, who is a practical right-of-the-roader. There is nothing communistic or even "pink" about this union. Written into the constitution of the TWUA is a provision that no member of the communist party or of Communist, Nazi or Fascist organizations can hold office in locals or subordinate organizations.

The textile field is virtually unorganized. Long a low wage industry, most of the mills, organized as well as unorganized, now pay 65 cents minimum hourly rates. As an eighty per cent unorganized field, it represents one of the last open shop areas in mass production. In January 1937, average straight time rates were 36.9 cents in the

(See page 24)

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only places where new discoveries and improvements are being made. Important facts are learned in the mills themselves.

FIBER ANALYSIS
(Continued from page 8)

more adaptable to this type of work. One reason for this may be attributed to the fact that women, in general, surpass men at jobs which require precision work and which call for fine hand dexterity. Thorough knowledge and infinite care are required for this work.

Trainees become proficient with the Fibrograph used for determining fiber length and the Suter-Webb duplex fiber sorter for computing fiber length and length distribution and uniformity. The fibers are weighed after a fiber length array has been made, and the fiber fineness is obtained.

Microscopic tests are used in determining the relative thickness of the fiber cell walls for calculating fiber maturity. Thick-walled fibers indicate a high degree of maturity. Mature cottons tend to produce smoother yarns with fewer neps.

Tensile strength of fibers is determined by using the Pressley flat bundle method. Average cotton breaks between 78,000 and 82,000 pounds per square inch. The Pressley method is used in preference to the Chandler round bundle strength method, which is described by the American Society for Testing Materials.

Specific cotton fiber testing shows that in one case where three different samples of cotton each called 1 and 1/32 inches in staple length by the cotton classer, were examined in the laboratory and spinning tests were made, the samples gave the following results: the Oklahoma sample produced yarn strengths normally found in cottons with a staple length of 15/16 inch. The Carolina sample produced yarn strengths equivalent to those observed for cottons of 31-32 inch. The Brazos Valley (Texas) sample gave yarn strengths equal to cottons of 1 and 3/32 inches in staple length. These results clearly show the importance of knowing more of the qualities of cotton than the grade and staple length.

Precautions taken in the laboratory to insure accurate results include the following: (1) identification of the cotton samples, (2) proper selection of the sample so that results will be representative of the cottons tested, (3) checking the relative humidity (65% plus or minus 2% must be employed for all tests), and (4) checking all testing equipment for perfect operation.
"OPERATION DIXIE"

(Continued from page 22)

South. These same rates were 67.1 cents in December 1943, and had reached even higher levels a year later.

Whether the South becomes more unionized depends upon a number of factors. The NLRA, commonly known as the Wagner Act, holds an important key. Without it, the present campaigns of both the AFL and CIO would face an almost impossible task. An early postwar relapse might also mean defeat.

There is a more important matter than that, as to whether these union drives are successful or not. One thing that the union representative and the industry man whose responsibility is labor relations sometime lose sight of as they concentrate on immediate and practical issues is the larger problem created by their conflicting attitudes. This problem is that there is real power at stake. The essence of power in peacetime reduces itself to control over the opportunity to work and earn a livelihood. It is almost literally control of life and death.

Such power carries with it grave responsibility not only to the ones directly affected, but also to the public as well. Unless management and labor settle down and start utilizing this power which is theirs to go forward together in the same direction, the general public is going to insist upon the right to wield the power and to decide the direction in which it shall go.

Should this shift come, it will not be the first time in history that the power has changed hands. The monarch lost it to the landlord and he, in turn, to the business man. Maybe the labor leaders can take it from the employers. Whether they can or not, this fact is evident: unless the power thus held is used wisely, another, and maybe the cycle will begin again with government, will take it over. These shifts come because this power can dominate the pattern of our political and economic life. This power should be wielded by management and labor together in a cooperative endeavor. Only then can either be sure of holding it. Industrial democracy and not the jungle law of the tooth and the fang would then reign.
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