
Girls Industrial College Bulletin.

NUMBER 5.

MARCH, 1904.

Issued quarterly by the Girls Industrial College of Texas, Denton, Texas.

Entered February 18, 1903, at Denton, Texas, as second-class matter, under Act of Congress of July 16, 1894.

Spring Announcement, Girls Industrial College of Texas



Located at Denton

Third Term Begins
March 22, 1904.

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AUSTIN:
VON BOECKMANN-JONES COMPANY, STATE PRINTERS.
1904

CALENDAR, 1904.																															
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COLLEGE CALENDAR.

1903.

First Term of Thirteen Weeks Begins.... Wednesday, September 23.
Entrance Examinations and Registration... Wednesday and Thursday, September 23 and 24.
Organization of Classes..... Friday, September 25.
Class Work Begins..... Saturday, September 26.
Reception to Students by the Faculty.... Monday evening, September 28.
Thanksgiving—Holiday..... Thursday, November 26.
First Term Ends..... Wednesday, December 23.
Christmas Vacation Begins..... Thursday, December 24.

1904.

Christmas Vacation Ends..... Tuesday, January 5.
Second Term of Eleven Weeks Begins... Wednesday, January 6.
Texas Independence Day—Holiday..... Wednesday, March 2.
Second Term Closes..... Saturday, March 19.
Third Term of Twelve Weeks Begins.... Tuesday, March 22.
San Jacinto Day—Holiday..... Thursday, April 21.
Baccalaureate Sermon..... Sabbath, June 5.
Demonstration and Exhibition Day..... Tuesday, June 7.
Class Day..... Wednesday, June 8.
Commencement Day..... Thursday, June 9.
First Term of Second Year Begins..... Wednesday, September 21.

BOARD OF REGENTS
OF THE
GIRLS INDUSTRIAL COLLEGE

HON. A. P. WOOLDRIDGE, *President*, Austin.

MISS M. ELEANOR BRACKENRIDGE, *Vice-President*, San Antonio.

MRS. HELEN M. STODDARD, *Secretary*, Fort Worth.

HON. JOHN A. HANN, *Treasurer*, Denton.

HON. CLARENCE OUSLEY, Fort Worth.

MRS. CONE JOHNSON, Tyler.

HON. ROSSER THOMAS, Bonham.

Address inquiries to the President of the College,
CREE T. WORK, Denton.

FACULTY.

MR. CREE T. WORK, *President*.—*Psychology, Ethics, Manual Training*. State Normal School, Indiana, Pa.—B. E. D., 1890; M. E. D., 1892. Boston Sloyd Training School—Diploma, 1893. Columbia University—Teachers College Higher Diploma, 1900. Honorary Life Diploma of the State of Colorado, 1901. Superintendent of Schools, Du Bois, Pa., 1890-1892. Director of Industrial Department, State Normal School, Colorado, 1892-1900. Fellow in Manual Training, Teachers College, 1899-1900. Supervisor of Manual Training for the City of San Francisco, 1900-1903.

MISS LUCY E. FAY.—*English Language and Literature*. Student in Kleinburg School, Virginia. Tulane University—Newcomb College—A. B., 1895. University of Texas—A. M., 1901. Private Tutor, 1896-1897. Teacher in Whitis School, Austin, Texas, 1901-1903.

MISS JESSIE H. HUMPHRIES.—*History and Economics*. Howard Payne College—A. B., 1896. University of Chicago—A. B., 1899. Teacher Elementary Schools. Instructor in English and History, Bonham High School, 1900-1902; Dallas High School, 1902-1903.

MRS. GESSNER T. SMITH.—*Modern Languages and Latin*. Student in Berlin and Madrid, 1885-1886; at the Sorbonne, Paris, 1900-1901; University of Chicago, 1897. Mistress of Modern Languages, Industrial Institute and College of Mississippi, 1886-1888. Student and Teacher, Tuscaloosa Female College, Ala., 1892-1895. Teacher in East Tennessee Institute, 1895-1900. Mistress of Modern Languages and Instructor in Latin, Industrial Institute and College of Mississippi, 1901-1903.

MR. A. L. BANKS.—*Mathematics*. Marvin College—A. B., 1880. Student at University of Virginia and University of Chicago. Agricultural and Mechanical College of Texas—B. S., 1892; M. S., 1894. Professor of Mathematics, Marvin College, 1880-1883. Professor of Mathematics, Salado College, 1883-1884. Principal Bryan High School, 1884-1891. Associate Professor of Mathematics, Agricultural and Mechanical College of Texas, 1891-1903.

MR. C. N. ADKISSON.—*Physical Science and Photography*. Central College, Texas—A. B., 1890. Graduate in Bacteriology, University of Louisville, 1891. Student Vanderbilt University, 1892. Instructor in Science, Polytechnic College,

Fort Worth, 1892-1897; Granbury College, 1898; Randolph College, 1899-1901; Terrell University School, 1901-1903. Instructor in Chemistry and Physics, Colorado Chautauqua, 1902-1903.

MISS HARRIETT V. WHITTEN.—*Biological Science and Geology.*

University of Texas—B. S., 1898; M. S., 1900. Student Assistant in Geology, University of Texas, 1897-1899. Tutor in University of Texas, 1899-1902. Instructor in Geology, University of Texas, 1902-1903.

MISS MARY LOUISE TUTTLE.—*Domestic Science, Dairying, Laundering.*

St. Margaret's Diocesan School, Waterbury, Conn., 1885. Diploma in Domestic Science, Teachers College, Columbia University, 1902. Supervisor of Domestic Department, Waterbury Hospital, 1898. Domestic Manager, Pennoyer Sanatorium, Kenosha, Wisconsin, 1901. Assistant in Domestic Science, Teachers College, 1901-1902. Tutor in Domestic Science, Teachers College, 1902-1903. Student Connecticut Agricultural College, 1903.

MISS ELMA B. PERRY.—*Domestic Science.—Cookery.*

Ohio State University—B. Sc., B. Ph., 1901. Fellow and Assistant Teacher of Botany, Ohio State University, 1901-1902—Post-Graduate Work. Student at Wesleyan University. Director Department of Domestic Economy, Stout Manual Training School, Menomonie, Wisconsin, 1902-1903.

MRS. HELEN B. BROOKS.—*Domestic Art.—Sewing, Dressmaking, Millinery.*

Graduate Beck's Commercial School, Ohio, 1898. Pratt Institute, Brooklyn, New York—Domestic Art, 1903. Commercial Secretary, 1899-1901. Instructor in Sewing, St. Bartholomew's Industrial School, New York City, 1902-1903. Assistant Instructor, Pratt Institute. 1902-1903.

MISS AMELIA B. SPRAGUE.—*Fine and Industrial Arts.*

Cincinnati Art Academy, 1887-1891. Designer, Decorator and Teacher at Rockwood Pottery, Cincinnati, 1899-1902. Pratt Institute, 1899-1900, 1902-1903. Private Teacher of Drawing, Water Color, Basketry and China Painting. Normal Art Instructor, Madisonville, Ohio, Public Schools, 1902. Instructor in Hand-work in Asacog and Greenpoint Social Settlements, Brooklyn, N. Y., 1903. Instructor in Art and Hand-work, Ohio State Normal School, Miami University, 1903.

MISS JESSIE McCLYMONDS.—*Elocution, Physical Culture, Vocal Music.*

State Normal School, Edinboro, Pa., B. E. D., 1887; M. E. D., 1889. Instructor in Music, Public Schools, Colfax, Wash., 1891-1892. Instructor in High School, Colfax, Wash., 1892-1894. Emerson College of Oratory, Boston, Mass., 1901.

Public Readings, 1901-1903. Post-Graduate Course, Emerson College of Oratory, 1903. American Institute of Normal Methods (Music), Boston, 1903.

MR. HARRY GORDON ALLEN.—*Commercial Art.*

Ottawa University, Kansas. University of Chicago, 1899-1901. Expert Court Reporter. Accountant. University Stenographer. Director Commercial Department, High School, Dubuque, Iowa, 1901-1903.

MISS REBECCA M. EVANS, M. D.—*Physician and Lecturer on Physiology and Hygiene.*

Mount Union College—Normal Department, Alliance, Ohio, 1892. Northwestern University, Woman's Medical College, Chicago, 1902. Teacher High School, 1893-1898. Interne New England Hospital for Women and Children, Boston, 1902-1903.

MR. WALTER J. STOVALL, *Secretary.*

MR. A. J. SEIDERS, *Landscape Gardener.*

MR. R. H. McSPADDEN, *Gardener.*

MR. C. W. FERGUSON, *Engineer.*

FACULTY COMMITTEES.

Curriculum.

MR. ADKISSON.	MISS TUTTLE.	MISS SPRAGUE.
MISS HUMPHRIES.	MR. ALLEN.	
MRS. BROOKS.		MR. BANKS.

Classification.

MR. BANKS.	MISS FAY.	MISS PERRY.
MISS HUMPHRIES.	MRS. SMITH.	

Affiliation.

MISS WHITTEN.	MR. ADKISSON.	MISS HUMPHRIES.
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Graduation and Certification.

MR. ADKISSON.	MISS TUTTLE.	MISS FAY.
MISS SPRAGUE.	MR. ALLEN.	

Attendance.

MISS HUMPHRIES.	MISS PERRY.	MISS WHITTEN.
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Literary Societies.

MR. ALLEN.	MISS MCCLYMONDS.	MISS FAY.
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Exhibition.

MISS SPRAGUE.	MRS. BROOKS.	MISS PERRY.
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Athletics.

MISS MCCLYMONDS.	MRS. BROOKS.	DR. EVANS.
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Boarding Arrangements.

MRS. SMITH.	MR. BANKS.	MISS TUTTLE.
DR. EVANS.	MRS. BROOKS.	

Entertainment.

MISS TUTTLE.	MRS. SMITH.	MISS SPRAGUE.
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Mentor.

DR. EVANS.	MR. BANKS.	MISS WHITTEN.
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The President is ex-officio a member of all Committees.

THE GIRLS INDUSTRIAL COLLEGE OF TEXAS.

The purpose and scope of the "Texas Industrial Institute and College for the Education of White Girls of the State of Texas in the Arts and Sciences" is set forth in the legislative act establishing the institution: "Be it enacted by the Legislature of the State of Texas: * * * Sec. 5. That the board of regents shall possess all the powers necessary to accomplish and carry out the provisions of this act, the establishment and maintenance of a first class industrial institute and college for the education of white girls in this State in the arts and sciences, at which such girls may acquire a literary education, together with a knowledge of telegraphy, stenography and photography; also a knowledge of drawing, painting, designing and engraving, in their industrial application; also a knowledge of general needle work, including dressmaking; also a knowledge of bookkeeping; also a thorough knowledge of scientific and practical cooking, including a chemical study of food; also a knowledge of practical housekeeping; also a knowledge of trained nursing, caring for the sick; also a knowledge of the care and culture of children; with such other practical industries as from time to time may be suggested by experience, or tend to promote the general object of said institute and college, towit: fitting and preparing such girls for the practical industries of the age." (Enacted by the Twenty-seventh Legislature, April, 1901.)



LOCATION.

The Girls Industrial College is situated just in the outskirts of Denton, to the northeast, in a campus of seventy acres of rising ground overlooking the city and the surrounding country. The work of laying out and improving the grounds has been under way for several months, and no effort will be spared to make the already beautiful place still more pleasing to the eye. Back of the building and to the north is a grove of oaks; also an orchard and berry gardens, the products of which will be turned to account in the domestic department of the institution. An artesian well six hundred feet deep, just in the rear of the building, gives a bounteous supply of the purest water. A dairy barn, a poultry yard, and a greenhouse have been built during the year. The central portion of the main building has been completed and is well equipped with furniture and apparatus for carrying on the work of the College.

Denton is located in a prosperous agricultural region. It has a population of about 5,000, and is a city of good homes, intelligent people, and has an elevating moral and social atmosphere. The representative religious denominations of the State have churches here. Denton is rapidly becoming an educational center, it having not only a good system of public schools, including a high school, but also the John B. Denton College, the North Texas State Normal, and the Girls Indus-

trial College of Texas. The city is in a healthful location, and is supplied with excellent water from an artesian well. It is within thirty-five miles of Fort Worth, about the same distance from Dallas, and is reached by the Missouri, Kansas & Texas and the Texas & Pacific railways.



CONDITIONS FOR ENTRANCE.

Who may attend the College? All white girls of good moral character who have attained the age of sixteen years, who have a knowledge of the common school subjects, who wish to acquire a higher education which includes a thorough practical training for life, who come to the school with the clear and earnest purpose of doing their best work and of complying with the regulations of the institution, and who pass satisfactorily the entrance examinations prescribed by the Faculty. The examination for entrance to the Preparatory Classes will cover the subjects of Orthography, Reading, Arithmetic, English Grammar, Composition, Geography, Physiology and Hygiene, History of Texas, and United States History and Civil Government. The questions for the entrance examination will not be taken from any particular text-book or books, but will be such as are reasonable for students who have made a proper study of the subjects indicated. Those who pass the examination in the subjects named will be admitted to the First Preparatory class. Students who show by the examination that they have a *thorough* knowledge of these subjects, and who also pass an examination in the elements of Algebra and Physical Geography, will be admitted to the Second Preparatory class. Students who have taken work as high as the tenth grade (in some cases possibly the ninth) should be able to enter this class. Those holding Second Grade State Certificates will be admitted to the Second Preparatory class without examination. Graduates of reputable high schools, and those holding First Grade State Certificates will, at present, be admitted to the Junior class without examination. Those who have taken the equivalent of the high school course, but who have not been graduated, will be given an examination for entrance to the Junior class. Students who lack proficiency in one or more subjects in any given class, may, at the discretion of the Faculty, be admitted to such class, subject to the condition of making up back work. Students who fail to make an average passing mark in any year's work will be advised to review, during the succeeding year, the same work, or at least the portion of it in which they are weak.

Advanced students who have had work in other schools of high standing, equivalent to that required in any of the subjects of the courses in the College, will be given due credit for the same, thus enabling them to complete a course in less time than is indicated above. Graduates of good high schools should be able to complete the work, as at present arranged, in two years. Special students, spoken of below, who do not hold the necessary certificates or other satisfactory credentials, will be subject to an examination as to their general fitness for undertaking the work proposed, and will be admitted as special students only on the written permission of the Classification Committee. All students must

accept their classification as fixed by the Faculty, and may not change it or their class schedule without permission from the proper authority.

Students will be admitted at the beginning of any term.



IRREGULAR STUDENTS.

Students who, for reasons satisfactory to the Classification Committee, are unable to carry a regular program of work, may be classified as irregular students, taking such program of work as may be approved by said committee. All such students, however, will be required to pass the examination for entrance to the First Preparatory year, or to present credentials as indicated above. Young students who fear that they may not be able to remain long enough to complete the entire regular course should carry it as far as they can rather than plan to enter as irregular students. Effort will be put forth to make all courses so practical and thorough at all points that the greatest good will be gained by taking the work in its regular order. The aim of the College will be to encourage thorough, earnest work in all departments, and the purpose of students who attend it should be to take enough time to do the work in a manner creditable to themselves and the institution. The italicized paragraph under "Special Students applies also to "Irregular Students."



SPECIAL STUDENTS.

Opportunity for special courses, not leading to a diploma of graduation, will be offered to a limited number of students who show ability to carry on the work they propose to undertake. Such students must be at least sixteen years of age, preferably older, and should possess the general qualifications of regular students in the Junior year. Those who satisfactorily complete such partial courses will be given certificates of proficiency in the subjects covered. *This arrangement for special students is intended primarily for adults whose time is limited and who are well prepared by training and experience for such work, rather than for immature girls; it is not intended to give encouragement or opportunity to young girls for short or superficial courses. The simple desire of a young lady to enter as a special student is not evidence that she is entitled to be so classified. There must be evidence of special qualifications and an especially good reason, acceptable to the Classification Committee, before special classification will be made.*

Teachers who desire to prepare for teaching manual training, including sewing and cooking, in the public schools, will be welcomed to the institution, and will be provided with special courses in the theory and practice of work suitable for primary, grammar and high schools. Particularly would we encourage those in this work who are thoroughly interested in it and who have had successful teaching experience or a Normal School course, or both.

DEPARTMENTS.

The field to be covered by the work of the Girls Industrial College is so large that it has been impossible at this time to organize all of the departments contemplated in the law. Therefore only the subjects for which there is the most urgent present demand, and which seem to be of the most vital importance in the practical education of our girls, are at present introduced. These are arranged under four departments, known as the "English-Science Department," "Domestic Arts Department," "Fine and Industrial Arts Department," and "Commercial Arts Department." As the College develops, new departments will be organized and other subjects introduced.

English-Science Department. The courses offered in this department are adapted to the needs of those who want to give their chief attention to scientific and literary subjects. It involves more collateral reading and a larger proportion of home study than other departments.

Domestic Arts Department. As the title indicates, this department places stress on training of a domestic nature. The literary and scientific features it includes contribute to make it a broad, practical course. While girls may have no need or desire to do everything required in the course after they leave school, they will be largely benefited by the training involved in each subject of the department.

Fine and Industrial Arts Department. This department includes numerous subjects of a practical nature, and is intended to prepare students for profitable remunerative occupations. Here again, work in literature and science is deemed essential to the most successful work, both during and after the completion of the course. In this and other practical departments a large amount of laboratory study and practice is required.

Commercial Arts Department. Here is offered a thorough course for those who wish to prepare for clerical work, reporting, etc. This department is intended to meet the demand for more broadly intelligent and more accurate office workers in commercial lines. The work ranks with that of other departments in extent and grade.

The regular course in any department includes the completion of all work indicated. All who satisfy the requirements of any portion of the course, either by examination or certificate, will be given due credit therefor; provided, that at least one year's work at the institution will be required of all candidates for a diploma of graduation.

In literary and scientific subjects much of the work is common to all departments. Wherever practicable classes of the different departments recite together. The satisfactory completion of subjects not marked in the tabulated course as optional is required of regular students in the several departments.

Students may pursue the work of two departments at the same time, subject to the approval of the instructors concerned and the Classification Committee. It stands to reason that such students can not expect to complete both courses in the same time as would be required for but one.

After entering upon the work of any department a student may not change to another department, or alter her program, without the approval of the Classification Committee.

Special students may choose their course, subject to the approval of the respective teachers involved and of the Classification Committee. Certificates of proficiency in any branch will not be issued for less than one term's work in such branch.

Courses for special students are not here outlined, because they must be arranged according to the lines of work desired. These will be made up by electing work already provided in the different departments.

Special Classes will be organized only when several students desire to take work not already provided for in the curriculum.

Advanced work will be provided for students who desire to pursue any subject further than is required by the regular courses.

The equipment and teaching force of the College is adequate for doing the best work in the several departments. More than \$20,000 worth of equipment has been purchased for the institution during the past year.



TABULATED COURSE OF STUDY.

Bulletin No. 3 (August, 1903) contains a formal outline showing the courses of study arranged for this institution. Those interested in this should send for a copy. It will be noticed that in all of the courses literary work has a prominent place. Industrial training is most valuable, but, taken by itself, it is not sufficient. Both for the purpose of training and that of giving information, literary work is indispensable in a thorough education. In the courses as arranged an effort has been made to furnish the two lines of work—industrial and literary—in proper proportions for the best, all-round, practical training for life's work. In the early part of the course the literary feature naturally receives emphasis, connecting with school work previously done by the students, and preparing them for the deeper appreciation of the scientific features of the industrial courses. During the Junior and Senior years emphasis is placed on the manual work, and special technique developed. Let no student come to the College with the idea that books are here laid aside. Books are among the tools of all of the departments of the Girls Industrial College of Texas.

Bulletin No. 6 (June, 1904) will contain the course of study as planned for next year, together with other valuable information pertaining to the work of the College.



APPOINTIVE STUDENTS.

The Board of Regents of the Girls Industrial College has, according to law, made provision for about two hundred appointive students, to be apportioned throughout the State on the basis of the number of educable white girls in the several counties. The number of appointees to which each county is entitled is shown by the list, page 15. The allotment in each case applies to the entire county, including all independent and community districts. It will be noticed that in numerous cases, where the population is sparse, several counties are grouped together as being

entitled to but one appointive student. In such case the superintendents involved are expected to confer in making the appointment.

All qualified individuals will be made welcome in the school, whether they are fortunate enough to receive an appointment or not. The advantages of appointment are: 1. The incidental fees, amounting to \$15 per year, are remitted to appointive students. 2. Appointive students will be given the free use of text-books, which saves about \$10 per year. This makes an appointment worth about \$25 per year. An appointment holds good only for the scholastic year for which it is issued, or for such fraction thereof as the student named in it may actually attend the College. Appointive students who leave school during the year thereby forfeit their appointments.

Appointments to the College are to be made as indicated in the apportionment table given below, and according to the following regulations adopted by the Board of Regents:

1. All appointees shall be qualified as indicated above ("Conditions for Entrance"), and as set forth in the certificate of appointment furnished to county superintendents by the College. Appointive students are not exempt from the entrance examinations, except when they hold high school certificates, State certificates, or other satisfactory credentials.

2. The appointments shall be made by the superintendents of schools of the various counties, the qualifications of appointees to be determined preferably by competitive examination, or by any other method said superintendents may see fit to employ.

3. Where two or more counties are grouped in the apportionment table the appointments shall be made by joint action of the superintendents involved.

4. All appointments shall be officially reported to the President of the College before the first day of June. Appointments not so reported shall revert to the institution, and may be allotted and conferred at the discretion of the President of the College, or according to the further instructions of the Board.

5. In case any appointee should later find it impracticable to fulfill her appointment, the appointing superintendent shall have authority to transfer it to another worthy applicant in his county, provided that such transfer shall be made and properly certified to the President of the College before the opening of the term, in September.

6. County superintendents shall publish notice in a newspaper of their county, or counties, at least three weeks before the appointments are made, as provided in the law.



APPORTIONMENT OF APPOINTIVE STUDENTS BY COUNTIES.

Following is given the number of appointive students to which the several counties are at present entitled. The instructions to county superintendents quoted above indicate the method of appointment. Blank certificates of appointment, giving details of qualification, will be furnished to superintendents by the College.

Anderson	1	Dimmit (see Maverick).	
Angelina	1	Duval and Zapata.....	1
Aransas (see Bee).		Eastland (see Erath).	
Archer (see Jack).		Ector (see Coke).	
Armstrong (see Donley).		Edwards (see Bandera).	
Atascoso and Frio.....	1	Ellis	4
Austin	1	El Paso	2
Bandera, Kerr and Edwards.....	1	Erath, 2; Eastland, 1; Erath and Eastland, 1	4
Bastrop	1	Falls	2
Baylor (see Wilbarger).		Fannin	4
Bee, San Patricio, Refugio and Aransas	1	Fayette	1
Bell	3	Fisher (see Scurry).	
Bexar, 4; Guadalupe, 1; Bexar and Guadalupe, 1.....	6	Floyd, Hale, Motley, Dickens, Cros- by, Lubbock, Briscoe, Swisher, Castro, Lamb and Parmar.....	1
Blanco (see Gillespie).		Foard (see Hardeman).	
Borden (see Scurry).		Fort Bend (see Wharton).	
Bosque (see Johnson).		Franklin	1
Bowie	2	Freestone	1
Brazoria, Matagorda, Jackson and Calhoun	1	Frio (see Atascosa).	
Brazos	1	Galveston	2
Brewster (see Presidio).		Garza (see Scurry).	
Briscoe (see Floyd).		Gillespie and Blanco	1
Brown	1	Glasscock (see Coke).	
Burleson	1	Goliad (see Victoria).	
Burnet	1	Gonzales, 1; DeWitt, 1; Gonzales and DeWitt, 1.....	3
Caldwell	1	Gray (see Potter).	
Calhoun (see Brazoria).		Grayson	4
Callahan, Shackelford and Throck- morton	1	Gregg and Marion.....	1
Cameron	2	Grimes	1
Camp and Morris.....	1	Guadalupe (see Bexar).	
Carson (see Potter).		Hale (see Floyd).	
Cass	1	Hall (see Donley).	
Castro (see Floyd).		Hamilton	1
Chambers (see Jefferson).		Hansford (see Potter).	
Cherokee, 1; Houston, 1; Cherokee and Houston, 1.....	3	Hardeman, Foard, Childress, Cot- tle, King and Stonewall.....	1
Childress (see Hardeman).		Hardin (see Tyler).	
Clay and Wichita.....	1	Harris	3
Coke, Mitchell, Howard, Sterling Glasscock, Midland, Martin, Ec- tor and Ward.....	1	Harrison	1
Coleman	1	Hartley (see Potter).	
Collin	4	Haskell (see Jones).	
Collingsworth (see Donley).		Hays	1
Colorado	1	Hemphill (see Potter).	
Comal and Kendall.....	1	Henderson (see Smith).	
Comanche	2	Hidalgo	1
Concho (see Tom Green).		Hill	3
Cooke	2	Hood and Somervell.....	1
Coryell	2	Hopkins	2
Cottle (see Hardeman).		Houston (See Cherokee).	
Crockett (see Val Verde).		Howard (see Coke).	
Crosby (see Floyd).		Hunt	4
Dalham (see Potter).		Hutchinson (see Potter).	
Dallas	5	Irion (see Tom Green).	
Deaf Smith (see Donley).		Jack and Archer.....	1
Delta	1	Jackson (see Brazoria).	
Denton	2	Jasper, Orange and Newton.....	1
DeWitt (see Gonzales).		Jeff Davis (see Presidio).	
Dickens (see Floyd).		Jefferson and Chambers.....	1
Donley, Hall, Collingsworth, Arm- strong, Randall and Deaf Smith. 1		Johnson, 2; Bosque, 1; Johnson and Bosque, 1.....	4
		Jones and Haskell.....	1
		Karnes and Live Oak.....	1

Kaufman	2	Rains (see Wood).	
Kendall (see Comal).		Randall (see Donley).	
Kent (see Scurry).		Red River	2
Kerr (see Bandera).		Reeves (see Presidio).	
Kimble (see Val Verde).		Refugio (see Bee).	
King (see Hardeman).		Roberts (see Potter).	
Kinney (see Maverick).		Robertson	1
Knox (see Wilbarger).		Rockwall	1
Lamar	3	Runnels and Nolan.....	1
Lamb (see Floyd).		Rusk	1
Lampasas (see San Saba).		Sabine (see San Augustine).	
La Salle (see Maverick).		San Augustine and Sabine.....	1
Lavaca	2	San Jacinto (see Polk).	
Lee	1	San Patricio (see Bee).	
Leon	1	San Saba and Lampasas.....	1
Liberty (see Montgomery).		Schleicher (see Val Verde).	
Limestone	2	Scurry, Fisher, Borden, Kent,	
Lipscomb (see Potter).		Garza, Lynn and Terry	1
Live Oak (see Karnes).		Shackelford (see Callahan).	
Llano and Mason.....	1	Shelby (see Nacogdoches).	
Lubbock (see Floyd).		Sherman (see Potter).	
Lynn (see Scurry).		Smith, 1; Henderson, 1; Smith and	
Moore (see Potter).		Henderson, 1.....	3
Morris (see Camp).		Somervell (see Hood).	
Motley (see Floyd).		Starr	1
Madison and Walker.....	1	Stephens (see Young).	
Marion (see Gregg).		Sterling (see Coke).	
Martin (see Coke).		Stonewall (see Hardeman).	
Mason (see Llano).		Sutton (see Val Verde).	
Matagorda (see Brazoria).		Swisher (see Floyd).	
Maverick, Kinney, Zavala, Dimmit,		Tarrant	3
La Salle and McMullen.....	1	Taylor	1
McCulloch (see Tom Green).		Terry (see Scurry).	
McLennan	3	Throckmorton (see Callahan).	
McMullen (see Maverick).		Titus	1
Medina and Uvalde.....	1	Tom Green, McCulloch, Concho and	
Menard (see Val Verde).		Irion	1
Midland (see Coke).		Travis, 2; Williamson, 2; Travis	
Milam	2	and Williamson, 1.....	5
Mills	1	Trinity	1
Mitchell (see Coke).		Tyler and Hardin	1
Montague	2	Upshur	1
Montgomery and Liberty.....	1	Uvalde (see Medina).	
Nacogdoches, 1; Shelby, 1; Nacog-		Val Verde, Kimble, Menard, Sut-	
doches and Shelby, 1.....	3	ton, Crockett and Schleicher....	1
Navarro	3	Van Zandt	2
Newton (see Jasper).		Victoria and Goliad.....	1
Nolan (see Runnels).		Walker (see Madison).	
Nueces	1	Waller (see Washington).	
Ochiltree (see Potter).		Ward (see Coke).	
Oldham (see Potter).		Washington, 1; Waller and Wash-	
Orange (see Jasper).		ington, 1.....	2
Palo Pinto	1	Webb	2
Panola	1	Wharton and Fort Bend.....	1
Parker	2	Wheeler (see Potter).	
Parmer (see Floyd).		Wichita (see Clay).	
Pecos (see Presidio).		Wimbarger, Baylor and Knox.....	1
Polk and San Jacinto.....	1	Williamson (see Travis).	
Potter, Oldham, Hartley, Dallam,		Wilson	1
Sherman, Moore, Hutchin-		Wise	2
son, Hansford, Ochiltree, Roberts,		Wood, 1; Rains and Wood, 1.....	2
Lipscomb, Hemphill, Wheeler,		Young and Stephens.....	1
Gray and Carson	1	Zapata (see Duval).	
Presidio, Brewster, Pecos, Jeff		Zavala (see Maverick).	
Davis and Reeves.....	1		

QUALIFICATIONS FOR APPOINTMENT.

Blank certificates of appointment are furnished to county superintendents by the College, which certificates, when filled out, should be returned to the President of the institution. They should reach him before the first day of June. Following is the wording of the certificate:

To the President of the Girls Industrial College:

Having examined into the qualifications of Miss of county, and knowing her to be of good moral character, diligent habits and worthy ambitions, and as being well trained in Orthography, Reading, Arithmetic, English Grammar, Composition, Geography, Physiology and Hygiene, History of Texas, and United States History and Civil Government, as these subjects are required to be taught in the Common Schools of Texas; and believing said Miss to be in all respects well worthy of the opportunity of attending the Girls Industrial College of Texas, I, the undersigned Superintendent of Schools of county, do hereby appoint her as a student in said Girls Industrial College, in accordance with the law and the regulations of the Board of Regents, and subject to the entrance requirements of said College. This appointment to be for the scholastic year 190...-190... The age of the above named appointee is years. Her postoffice address is, county, Texas. Her (father's, mother's, guardian's) name is

Respectfully submitted,

.....,
Superintendent of Schools, county.

Date, 190...

**SPECIAL ADVANTAGES.**

Among the special advantages of the Girls Industrial College mention should be made of the convenience of Denton to all portions of the State. The town is centrally located with respect to the densest population of Texas. It is situated just on the boundary between the prairies and the cross-timber country, has good drainage and is considered one of the most healthful locations in Texas. Denton is a clean town morally. There are no saloons here. It is a place of Christian homes, churches, fine social atmosphere, and is permeated with a progressive educational spirit. Mr. Andrew Carnegie has recently donated \$10,000 for a public town library in Denton.

The complete equipment of the Girls Industrial College and the special qualifications of the members of the Faculty for the most thorough work in their respective lines should commend the institution to those who are seeking superior opportunities. Parents will appreciate the supervision of their daughters by a Faculty selected with special care as to their fitness for properly overseeing and directing the lives of maturing young women. Outside of the school the students are always subject to the supervision of the teachers. In the College chapel

exercises are conducted each school day. The proper conduct and moral training of the girls are carefully looked after at all times. The churches of the different denominations in Denton welcome the students of the Girls Industrial College to their services and their Sabbath schools. It is expected that all students will attend the church to which they belong or which their parents or guardians prefer them to attend. Proper student organizations within the College will be encouraged, but no such organizations may be formed without the consent and approval of the President. All students will be required to conform to such regulations as may be adopted from time to time.



FACULTY.

The teachers of the Girls Industrial College are all specialists in their respective lines. They are persons of the most thorough training and of successful experience. In their selection the purpose and scope of the work of the institution has been carefully considered, as have also the many details of the proper instruction of the girls of Texas. Besides educational qualifications—which are indicated in connection with the names of the Faculty published on a preceding page—the matters of personal moral character, culture, tact, general disposition, habits, social qualities and special fitness for teaching girls, were fully considered. Parents may send their daughters to the Girls Industrial College with the confidence that their welfare in every respect—morally, intellectually and physically—will receive most conscientious care. Members of the Faculty will be glad at any time to answer inquiries of parents regarding their daughters. It is hoped that parents will visit the institution whenever they can make it convenient to do so.



PHYSICIAN.

The primary object in having a College physician is to prevent sickness. All students will be examined by the Physician at the beginning of the College year and will be expected to report to her their state of health as often as she deems necessary. A history of the physical condition of each student will be kept in writing. In cases of sickness, such a record is of great value. Should a student feel ill, she is expected to send, or come in person to the Physician at once. The Physician has daily office hours, at which time students may report, or consult her professionally. In case of serious illness the parents of the afflicted student will be notified immediately.

The Physician's services are free to students, medicines only to be paid for when prescriptions are filled at the drug stores. This applies to students only so long as they are in regular standing in the institution.

During the first month, the College Physician made over one hundred calls on out patients, the office calls varying from four to fifteen in a

day. There seems to be no hesitancy on the part of students to come to the office for advice, and to inquire about conditions which would be best suited to their state of health. As the work progresses and the College enthusiasm increases, we are glad to see the worst cases of nostalgia rapidly disappearing. Simple home remedies are advised as often as possible, in order to instruct the student, to teach simple home remedies, and also to economize for the patient whenever possible. The students are readily learning to see causes, and it is hoped that in this way they will learn that an ounce of prevention is worth a pound of cure.



RECREATION AND HEALTH.

Besides the physical culture required in all courses of the College, provision has been made for outside recreation, and students are encouraged to engage in out-door sports, such as tennis, basket ball and the like. Grounds have been prepared for this purpose on the College campus. The College Physician has the special oversight of the health of the students, both in their boarding places and in the school. Besides the regular required courses in Physiology and Hygiene, students receive special lectures on health, systematic exercise, sanitation, etc.



UNIFORM DRESS.

A uniform dress for the students has been adopted. All students, except those who, for weighty reasons (not financial) may be excused, are required to wear the uniform, which, for winter wear, consists of a navy blue, all wool, serge coat-suit, with the skirt of walking length, white Indian Head shirt waist and Oxford cap. Students are required to wear their uniforms on all occasions, hence other dresses can be of no service except to wear in their sleeping apartments. The suits must be made of the same grade, weave and color of material.

Students will purchase their caps at the College, and their jacket and skirt material from S. F. Grant & Company, Denton, Texas. Goods must not be purchased elsewhere. Goods not conforming in every detail to those adopted will not be approved. These goods are carried in stock for the students of the Girls Industrial College of Texas, and are sold to them at a special reduced price. They will not be sold except on a student's order from the College, and with the agreement that they are for the student's individual use. The white Indian Head cloth for shirt waists, the "Paula" collars (Corliss-Coon Company) and the blue silk string ties may be purchased at the store named or elsewhere. The skirt must be made according to Standard Pattern No. 7734, skirts to be opened down left side of front, closed at back; hooks on placket to be $1\frac{1}{4}$ inches apart; skirts to be hooked on waist with five hooks. The shirt waists are to be made by Standard Pattern No. 7944. The jacket by Standard Pattern No. 6999, lined with black Farmer's satin. In ordering jacket the bust measure should be taken over fullest part of bust;

the sleeve measure, starting from center of the back, over to arm hole, and, with hand on chest, continue measurement to hand.

Students who are capable of making their own dresses will be allowed and encouraged to do so. The cost of the uniform complete, with two skirts and six waists, will be approximately as follows:

Oxford Cap	\$ 2 50
One dozen collars and one tie	1 75
Two skirts	6 00 (plus the making)
Six shirt waists	3 00 (plus the making)
One jacket	6 50
<hr/>	
Total	\$19 75

For spring and fall wear the uniform will be the same as the above, with the exception that a sun bonnet will be substituted for the cap for school wear.



TEXT BOOKS.

Text books, for use in the College, will be furnished from the College book store on the following terms: All students, on taking out books, will be required to deposit the full value of the same with the Secretary. If the books are returned in good order at or before the close of the term, four-fifths of the deposit will be returned. In the case of appointive students the entire amount of the deposit will be returned. Students who desire to keep the books as their own property will be allowed to do so by paying the cost price for them. College note books, bookkeeping blanks, stationery, etc., will be sold at cost for cash. Students are subject to fines for damage to rented books.



BOARDING.

Boarding may be obtained in private families or in boarding houses within walking distance of the College. Students who so desire may have boarding places selected for them in advance of their arrival, or, if they prefer to select them afterward, this privilege will be accorded them. Students will not be allowed to board except at such homes or boarding houses as have the approval of the President of the College. Boarding houses will not be approved that do not have proper equipment and care, good sanitary conditions and wholesome and safe surroundings. It will be allowable for students to room at one place and take their meals at another; provided, that both places have been approved. Students must plan to pay room rent and boarding in advance. The College will not have a dormitory this year.



EXPENSES.

Tuition in the Girls Industrial College is free. The following are the essential expenses to be met by students:

Matriculation Fee, payable on first registration at the College...	\$ 5 00
Incidental Fee, of \$5.00, payable at the first of each term.....	15 00
Text-books, etc., about	10 00
Boarding and room, per calendar month, two in a room.....	
.....	from \$12.50 to 15 00

Add to these proper allowances for clothing, laundry and other personal expenses; also railroad fare to Denton and return, and a small allowance for incidentals.

The fees are payable strictly in advance. The matriculation fee is paid but once for all time, but must be paid by all students, whether appointive or not, whether regular, irregular, or special. Appointive students receive credit for the incidental fees (\$15) and will have the free use of text-books (\$10). Special students are required to pay the same fees as regular students. Fees will not be refunded to students who leave school during the term. Students who desire to take private lessons in music, which may be arranged for with special teachers in town, will be expected to pay from 50 cents to \$1.00 per lesson. Students taking painting and designing must furnish their own brushes, pens, paints, etc. Also, those who take china painting must pay for the ware on which to paint. This will be furnished to them at cost, and will be their own property. All students are entitled to the free use of library facilities and apparatus in the different departments in which they work. They will be held responsible for damage to equipment resulting from their own carelessness.

NEWS NOTES.

The second term of the College closes with 180 matriculates representing eighty-nine counties.

The students celebrated Washington's birthday by a Colonial party, held in the College building. After games, refreshments and a brief informal program, the celebration closed with the singing of patriotic songs.

The Daily Current History Bulletins, posted by the members of the classes in history, prove both interesting and profitable.

Electric motors are being installed to furnish power for the laundry, manual training and the creamery.

The College has a complete system of waterworks. From a 600-foot artesian well the water is forced into a 40,000-gallon brick and cement reservoir, which is securely enclosed, covered and well ventilated. Here the silt, forced up by the air compressor, settles to the bottom, leaving the clear, pure, cool water to be pumped into the 10,000-gallon steel tank which stands on a 65-foot steel tower, thus giving a good head and an abundant supply of fine water for use in the building, where it is used in the kitchen, science departments, creamery, laundry, steam-heating plant and sewerage system. There is also in the building a system of 2½-inch pipes with 2-inch hose connected, on all floors, for fire protection. Pipes also extend from the tank to the dairy barn,

the green-house and to the water garden. As soon as feasible a system of sprinkling hydrants will be arranged for watering the large lawn.



FRIDAY LECTURES.

At the beginning of the second term the following announcement of "Friday Lectures," to be given in the Science Lecture Room, was sent out:

DENTON, TEXAS, January 15, 1904.

During the second term, the Girls Industrial College offers a series of free lectures to the women of Denton and vicinity. The subjects selected for this series are presented herewith. The lectures will deal with practical home problems, and ought to be especially interesting to all homekeepers. They will be free from technicalities, and will be illustrated with experiments and pictures wherever practicable. You and your friends are cordially invited to attend. The lectures will begin promptly at four o'clock on the dates indicated and will close before five.

SUBJECTS AND SPEAKERS.

January 22.—"What Happens in Cooking," Mr. Adkisson.

January 29.—"Economy in Cooking," Miss Perry.

February 5.—"Harmful Bacteria," Mr. Adkisson.

February 12.—"The Care of Milk," Miss Tuttle.

February 19.—"Home Sanitation," Dr. Evans.

February 26.—"Kitchen Equipment," Miss Perry.

March 4.—"Home Decoration," Miss Sprague.

March 11.—"Home Laundering," Miss Tuttle.

March 18.—"Care of the Young," Dr. Evans.

The invitation was so generally accepted that at the first lecture the room, seating about eighty persons, was almost filled. At the second lecture standing room was in demand, and for the third it was necessary to invite the audience to the auditorium, where the remainder of the series is being given. An additional lecture—an X-Ray demonstration—was also given by Professor Adkisson.

Miss Tuttle's talk on "The Care of Milk" is published in this number of the Bulletin. It is the purpose to arrange another series of lectures for next year.



A LETTER.

Following is the substance of a letter addressed to all women with whom students of the College boarded during the first term. It is published here to indicate the standard of conduct to which all students are expected to conform. For convenience in supervising the students they are arranged in groups, each member of the Faculty having charge of a group:

DENTON, TEXAS, November —, 1903.

DEAR MADAM: In your interest and that of the Girls Industrial College, as well as for the benefit of the students who attend the College, I write to make a few suggestions relative to the students who board with you. In the short time that has passed since the opening of the College, many of the students have been heard to speak of their boarding accommodations in high terms. It is right that your home should, as far as practicable, take the place of the homes from which these students are now separated, and that you should take direct interest in the welfare of each student living with you. In this we feel that there should be the fullest and frankest co-operation between you and the College Faculty.

There are certain reasonable standards of conduct, out of school as well as in, to which students are expected to conform. Most students are properly inclined in such matters; should they become forgetful of the following regulations, you will kindly see to it that they are reminded of them. Should any student disregard them the same should be reported, without fear or favor, to the President, or to the member of the Faculty named below. The students living with you will be under the immediate supervision of who lives at Serious or urgent matters should be presented directly to the President:

1. Students are expected to keep their rooms neat and clean.
2. Their conduct at all times should be that of cultured young ladies. Do not permit conduct which you would not approve in your own family.
3. During study hours students should be in their own rooms—not visiting with their neighbor students. Study hours should be observed from 7 o'clock until 10 o'clock each evening, except on the Sabbath.
4. Late studying should not be permitted—10:30 o'clock p. m. is a reasonable limit.
5. Exercise should be taken and errands performed in the afternoon between school hours and supper. After dark is not the time to go walking.
6. Students may attend evening church services and entertainments of the Lyceum Course. They should not go to other evening meetings without direct permission from the Faculty.
7. They are not expected to receive company except on Saturday evenings, such company to be entertained in the parlor, and not to remain later than 10 o'clock. It is not considered proper for students to entertain their gentlemen friends in their own rooms, on the gallery, or on the streets. Students entertaining regular company are expected to place on file in the President's office the written consent of their parents in the matter.
8. Students should not accompany gentlemen driving. Those who wish to go driving with a properly chaperoned party are expected to have special permission from the Faculty in advance.
9. They should not leave town to go home or elsewhere without special permission.
10. In case of sickness the College Physician should be promptly notified.

11. Students may not change their place of boarding without good reason, and the direct permission of the Boarding Arrangements Committee.

12. Where any question arises, or if assistance is desired relative to the welfare of students, you are invited to counsel with the member of the Faculty named above, or with the President.

The College is depending upon you for the fullest co-operation in carrying out the above regulations, and in all other matters where your responsibility touches the welfare of the students. At any time you may wish to confer on the subject, you are invited to come to the College, to communicate by telephone, or in writing, or to call on the individual teachers in their homes. Let us know if we can give assistance in any way.

Sincerely yours,

CREE T. WORK,
President.



RECOMMENDATIONS TO PROSPECTIVE STUDENTS.

Be present on the opening day. Bring with you such of your textbooks as may be helpful in your work. Plan to make but one visit home during the year—at the Christmas vacation. Let your motto be, "Not how short, but how thorough." Plan to take time for your education. You will be required to make a uniform—or to have it made—immediately after you enter the College, if you do not have it when you come. If you want to make it before coming, send to S. F. Grant & Company, Denton, for materials. See a previous page. Read this entire Bulletin carefully. Write to the President or Secretary of the College two days in advance of your leaving home, stating the day and hour you expect to arrive in Denton, that we may meet you at the station.



A REQUEST.

All who expect to enter the College next fall are requested to fill out the following blank and to send it to the President as soon as possible. This is not a pledge and will not bind you to attend. It is simply a request for information that will assist us, particularly in the matter of providing ample boarding accommodations near the College for the students. So if you think you will attend, please fill out the sheet. This request is made of appointive students as well as of others who hope to attend.

(BULLETIN NO. 5.)

INFORMATION BLANK.

THIS WILL HELP US IN PLANNING FOR YOUR ACCOMMODATION.

Fill the blanks below, cut out this sheet and mail it to President Cree T. Work, Girls Industrial College, Denton, Texas, at once.

Date....., 1904.

I am planning to attend the Girls Industrial College of Texas, beginning next September.

Name in full..... Age

Postoffice.....

County.....

Have you an appointment to the College?

Name of parent or guardian.

If you have not had a high school course, in which grade were you when last in school?

What certificates or diplomas have you, if any?

.....
Do you expect to enter as a regular student, irregular student, or special student?

.....
In which department would you like to take your course?

.....
How much are you willing to pay per month for board?

Do you prefer board with a private family or in a boarding house?

.....
Do you want a boarding place selected in advance of your arrival?

.....
Add any other information or request here,

.....
.....
.....
.....
Give below the name and address of any friend who you think may be interested and might attend the College, to whom you would like a copy of this Bulletin sent.

Name.....

P. O..... County

THE CARE OF MILK.*

Our topic for this afternoon, "The Care of Milk," follows very naturally Professor Adkisson's most delightful talk of last week on "Harmful Bacteria." The fact that milk holds such an important place in our diet, is so universally used to a greater or less extent in every household,—must give us a common interest in the subject.

The public mind has ever recognized the importance of a pure-milk supply, and public officials everywhere have directed more or less effort toward this end; but I believe that we, as housekeepers, can accomplish more than the officials, and it is from the home-keeper's standpoint that I shall speak more particularly this afternoon. It should not be enough for us to know that a certain amount of whitish fluid has been left at our door each day and is available for use.

We should understand first somewhat of milk itself, its composition and food value, the changes that take place in milk, the conditions necessary to control these changes, and then we shall be able to raise our standard and maintain it, by first demanding a pure article and then being willing to pay for it. Hygienic conditions in any department of life entails labor, and labor costs money.

Milk is often spoken of as a perfect food, and so, in a sense, it is; for all the food principles, the elements necessary to support the life of the body are there. Please do not mistake me as advocating a milk diet, for we must not forget that to the adult these component parts would hardly be in the right proportion. Thus, in 100 pounds of good milk, the constituents would average 87 pounds, H_2O , 4 pounds fat, 5 pounds, milk sugar, 3.3 pounds casein and albumin and 7 pounds mineral salts.

It has been discussed before in these talks how the food is used by the body; but to enumerate again these functions, the food is used to form the tissues and fluids of the body, to repair the wasted tissues and to furnish us with a certain amount of potential energy, and so we speak of our foods as either tissue-formers or work and heat producers. In the milk the tissue-formers are the casein, albumin, mineral salts and H_2O ; the work and heat producers, the milk sugar, or lactose and the fat.

The composition of different milks would necessarily vary, depending on the breed of cows, not on the ration given, which affects the quantity rather than the quality of the milk produced.

In most States, to prevent adulteration of milk, a legal standard has been made, based on the per cent of fat and solids not fat contained in the milk. This is not a fair law, however, for milk falling below the legal standard might still be a pure and natural product. For other reasons, also, we cannot judge milk good or poor according to the per cent of solids it may contain, added to the fact that it is free from chemicals.

With the growth of the science of bacteria, a new and most important feature has developed, and the number of these little creatures con-

*"Friday Lecture" by Miss Mary Louise Tuttle, Auditorium of the Girls Industrial College of Texas, February 12, 1904.

tained in the milk must also form part of the test for the purity of the product. I might almost say all of the test.

Professor Adkisson has told us that bacteria are everywhere, and we might as well try to escape the air as these germs—harmful and harmless.

Milk in its natural state is pure and free from germ-life, but it is impossible for us to so obtain it; all we can do is to reduce the number and kinds of bacteria by proper handling.

It may be interesting for us to stop here for a moment and consider the bacteria themselves,—these minute creatures of plant origin. Resembling the cells of which plants are made, they require the same conditions for growth,—moisture, warmth and food. In the milk all these requirements are found, and the bacteria grow and multiply in a most incredible manner. Indeed, milk offers them a most inviting home, and is the *only* article of food in which all bacteria thrive. From a single cell as many as 200 may be produced in three hours, 10,000 in six hours, and so on.

The changes bacteria produce in milk are many, and vary with the kind, over two hundred different varieties of dairy bacteria having been discovered and described. Some give an unpleasant, others an agreeable flavor; bitter taints and odors are caused by bacteria; then, again, some of the changes are of a most harmless nature and what we note as the natural souring of milk is but the effect of these same germs. Take any acid—lemon juice or vinegar—and add to sweet milk, the result will be curdling of the casein and the phenomenon of souring. In exactly the same way several varieties of bacteria act on milk, producing acids in it from the different constituents of the milk on which they feed; but chiefly on the lactose or milk sugar, converting it into lactic acid.

Long before milk is sour to the taste it may contain an enormous number of bacteria and may have become more or less unwholesome. Lactic acid is not the only acid produced, but it is the chief one, and therefore the normal souring of milk is spoken of as the lactic acid fermentation, and it is only under rare conditions that this spontaneous souring does not occur.

Sometimes in winter milk will keep for a long time and when fermentation does begin it will show an entirely different type from normal souring.

If all the milk from some one dairy, or from a number of dairies in the same locality, show any uniform peculiarities of odor, flavor or color, it is time to investigate conditions there in a scientific manner, and rid those dairies of the particular germ which has infected them.

It is a common belief that milk or cream will sour in a thunder storm, and yet experiments of discharging electric sparks over the surface of milk have shown little or no effect, and we must conclude that the connection between the thunder shower and the souring of the milk is of a different character. It is merely that the bacteria grow more rapidly in warm, sultry weather, and the electric storm offers the most favorable atmospheric conditions. Dairymen have found it equally difficult to keep milk sweet during “dog-day” weather, when there is no

thunder; and also that their only remedy against such weather is scrupulous cleanliness in regard to all milk vessels.

The number of bacteria in milk depends largely on the age and temperature of the milk, and on the amount of dirt and filth contained. Now the questions arise, where do the bacteria come from, how harmful are they, and how may we overcome them? If we should really attempt the last, it would be, I fear, a more difficult problem than the boll weevil.

Most bacteria fortunately are not disease germs, and yet we must bear in mind that milk is often the cause of epidemics. Typhoid fever, scarlet fever, diphtheria and tuberculosis are too well known and too often traced to the milk supply. Sometimes this is due to the infection of the herd, possibly from the water supply used for watering the cows or about the barns in some way, or for washing the pails, cans, etc.

But plainly the bacteria are associated with filth, for experience has proved that cleanliness is the only weapon of defense. It may be dirty cows, unclean stables, from the feed, an unclean milk-house or creamery; the milkers may have soiled hands or clothes; the pails, cans and utensils may not be perfectly clean,—all are a source of danger. So it seems to me the first duty of the housekeeper is to know as much as possible about the dairy she patronizes, to visit it if possible and to study the methods employed. The same rules should apply there as in our home dairies.

All diseased animals and persons should be isolated from the dairy. The disease germs most to be feared are tuberculosis, typhoid fever, scarlet fever, diphtheria and cholera. Note the location of the stables, which should be on relatively high ground affording good, natural drainage. None of the dairy buildings should be near any marshy ground or stagnant water, and it is also desirable to separate them from the other farm accommodations,—the pig pen, chicken coop, etc. Both the stables and surrounding yards should be constantly cared for and kept in cleanly condition. The barns should be built in reference to both light and ventilation and plenty of windows should be provided for both purposes. The arrangement should be for the comfort of the animals and for convenience in working.

Lime is a good disinfectant, and white-washed walls are recommended on this account, and because they reflect the light. If used, the whitewash should be renewed two or three times a year.

I can not go into all the details of an ideal dairy barn, but will mention one or two desirable points. A special place should be provided, a room if possible, for the milkers to wash their hands and keep their changes of clothing. Also a separate milking room is most desirable on account of dust and germs; and for the same reason, no hay or dusty food should be given during milking. Many consider it desirable to feed the cows at this time, but the ration should be a moist grain. The hay and all food-stuffs should be kept separate from the animals and milking room. The cows themselves are a great source of contamination; their coats are well adapted for holding dust and dirt of all kinds; and so I would particularly emphasize the importance of washing them off—on flank, hips and udder—just before milking.

The first milk should always be rejected, as it is bound to come in

on the kitchen table, possibly for an hour or so before putting away. And I might mention right here, that milk and butter should always be placed in the same compartment of the ice chest by themselves, as both will readily absorb flavors and odors, more readily, of course, from some foods than others; yet it is much safer to keep them entirely separated.

If our milk is delivered by the milkman we have still another problem. I know one household where the milk is brought so early in the morning that it stands on the veranda for several hours before the family is up. To avoid the bottles being sun-baked in summer and frozen in winter, a covered box was arranged in a protected corner, and the milkman urged to place his bottles therein. Whether preparing the milk ourselves for market, or buying it, there is no better method of packing than the use of sterilized bottles, tightly sealed. They should be kept covered until opened for use.

There are several different ways of dealing with germs in milk, and sterilization is undoubtedly a most efficient means, but it is not without its drawbacks. It certainly alters the taste of the milk and renders it less digestible by destroying the fine emulsification of the fat and by coagulating the protein matter, the casein and albumin. However, where one can not be sure of the milk supply, and in the case of feeding young children, it is safer to either sterilize or pasteurize the milk.

Ordinarily speaking, sterilization is raising the milk to the boiling point and holding it there for some time, while pasteurization consists in keeping the milk at a temperature of 155° to 158° F. for about 20 minutes or one-half hour. I am speaking now of home methods. Sterilization really means the destruction of all germ life, and to effect this it would be necessary to raise the temperature several degrees above boiling, a special apparatus would be required and steam heat. It is known that the germ spores will resist the boiling point and develop after the milk is cooled; for that reason sterilized milk has its time limit for keeping, even if it should not be again exposed to the air. If rendered absolutely sterile above 212° F., the effect on the milk is even more injurious.

A very simple home apparatus may be devised for pasteurizing with very little expense: Place the milk in bottles from which it is to be used, having first boiled the bottles; cork them tightly with cotton, then place on a rack on the bottom of a pail or can of some description, and fill with water as high as the milk in the bottles; a thermometer should be inserted and water heated to 155° F.; then remove from the fire and cover can for one-half hour. The bottles are now taken out, cooled rapidly and kept cool until needed.

The simplest and best way to heat the milk for use is to place the bottle in hot water and keep there until of the right temperature. Milk so treated will keep for twenty-four hours. Most of the disease germs are killed at a lower temperature than are the germs causing souring; so, if it is the purpose to keep the milk for a longer time, sterilization is necessary. Pasteurization destroys the properties of the milk less than sterilization, and the heat is sufficient to destroy all the bacteria likely to be present.

The cleansing of the feeding bottle is most important; after first

rinsing in warm water it is well to let it stand for some time in borax water, then wash thoroughly with a brush in hot soapsuds, rinse well and boil at least 20 minutes.

There are many other features in connection with milk and its care, but we can not take time to dwell on them all.

I will briefly mention the skimming, and would like to say a word in favor of using the separator where there is much milk to be handled. It is a great saving of time and money. The fat is much more completely recovered from the milk, the skim milk is available for feeding the farm stock while it is still fresh and sweet, and the handling of the cream alone is a much simpler problem as regards quantity. In saying this I am, of course, referring to the handling of milk for butter-making. There is also another point in favor of the use of separators where it is practicable. Many of the bacteria and much of the dirt contained in milk, and which would pass through an ordinary strainer, will be left in the slime which is deposited on the sides of the bowl of a centrifugal separator, owing to their greater specific gravity.

To pass on, chemicals are sometimes added to milk to destroy germ life, but it is a practice that should never be permitted. Those in most common use are salicylic acid, boracic acid, borax, carbonate of soda and sometimes formalin. These substances can be used in such small quantities without detection that their effect on the germs is not so great as is generally supposed; and, although not regarded as poisons the effect of taking them constantly into the system, even in such small doses, is very injurious to the digestive system. Perhaps the strongest objection against the use of such preservatives is the fact that they serve to disguise any odors due to a putrifiactive condition of the milk. Thus ptomaines might be produced without the usual tell-tale scent and the real dangerous character of the milk concealed. In our own homes I am sure there is little danger of our using any of these preservatives, but it is something to be on our guard against in large cities, and well worth knowing about.

I feel that this subject has been very lightly treated and some phases we have not even touched upon. If any of you are further interested, I would like to refer you to the many government bulletins constantly being issued along all these lines, most of which are free upon application to the Department of Agriculture; where there is any price attached, it is merely nominal, to cover the cost of printing, etc.

I trust my object has been clear this afternoon. It might be summed up in just a few words: We are all dependent on the use of milk; we know it to be a most nutritious and economical food; it is subject to more impurities than almost anything else; it is generally used in the raw state and may thus cause most serious and even fatal diseases; and the purity and quality of milk can not be judged by its appearance. These impurities are connected with uncleanness, and our only way of winning the fight is to wage war on the aseptic side.

