FOURTH

ANNUAL CATALOGUE

— OF THE —

Agricultural and Mechanical College

OF TEXAS.

SESSION 1879-80.

RAILROAD DEPOT AND POSTOFFICE:
COLLEGE STATION, TEXAS.
1880.

Agricultural and Mechanical College

OF TEXAS.

This College owes its origin to—

AN ACT

DONATING PUBLIC LANDS TO THE SEVERAL STATES AND TERRITORIES WHICH MAY PROVIDE COLLEGES FOR THE BENEFIT OF AGRICULTURE AND THE MECHANIC ARTS.

1. *Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled—*

That there be granted to the several States, for the purposes hereinafter mentioned, an amount of public land, to be apportioned to each State, a quantity equal to Thirty Thousand acres for each Senator and Representative in Congress to which the States are respectively entitled by the apportionment under the census of eighteen hundred and sixty: PROVIDED, That no mineral lands shall be selected or purchased under the provisions of this act.

SEC. 2. AND BE IT FURTHER ENACTED, That the land aforesaid, after being surveyed, shall be apportioned to the several States in sections or sub-divisions of sections not less than one quarter of a section; and whenever there are public lands in a State subject to sale at private entry at one dollar and twenty-five cents per acre, the quantity to which said States shall be entitled shall be selected from such lands within the limit of such State, and the Secretary of the Interior is hereby directed to issue to each of the States in which there is not the quantity of public lands subject to sale at private entry at one dollar and twenty-five cents per acre, to which said State may be entitled under the provisions of this act, land scrip to the amount in acres for the deficiency of its distributive share; said scrip to be sold by said States and the proceeds applied to the uses and purposes prescribed in this act, and for no other use or purpose whatsoever; PROVIDED, That in no case shall any State to which land scrip may thus be issued be allowed to locate the same within the limits of any other State, or of any Territory of the United States,

but their assignees may thus locate said land scrip upon any of the unappropriated lands of the United States subject to sale at private entry at one dollar and twenty-five cents or less, per acre: AND PROVIDED FURTHER, That not more than one million acres shall be located by such assignees in any one of the States: AND PROVIDED FURTHER, That no such location shall be made before one year from the passage of this act.

SEC. 3 AND BE IT FURTHER ENACTED, That all the expenses of management, superintendence and taxes from date of selection of said lands, previous to their sales, and all expenses incurred in the management and disbursement of the moneys which may be received therefrom, shall be paid by the States to which they may belong, out of the treasury of said States, so that the entire proceeds of the sale of said lands shall be applied without any diminution whatever to the purposes hereinafter mentioned.

SEC. 4. AND BE IT FURTHER ENACTED, That all moneys derived from the sale of the lands aforesaid, by the States to which the lands are apportioned, and from the sale of land scrip hereinbefore provided for, shall be invested in stocks of the United States, or of the States, or some other safe stocks; yielding not less than five per centum upon the par value of said stocks; and that the moneys so invested shall constitute a perpetual fund, the capital of which shall remain forever undiminished (except so far as may be provided in section fifth of this act), and the interest of whith shall be inviolably appropriated by each State which may take and claim the benefit of this act, to the endowment, support and maintenance of at least one college where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in such manner as the Legislatures of the States may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life.

SEC. 5. AND BE IT FURTHER ENACTED, That the grant of land and land scrip hereby authorized, shall be made on the following conditions, to which, as well as to the provisions hereinbefore contained, the previous assent of the several States shall be signified by legislative acts:

First, If any portion of the fund invested, as provided by the foregoing section, or any portion of the interest thereon, shall, by any action or contingency, be diminished or lost, it shall be replaced by the State to which it belongs, so that the capital of the fund shall remain forever undiminished; and the annual interest shall be regularly applied without diminution to the purposes mentioned in the fourth section of this act, except that a sum not exceeding ten per centum upon the amount received by any State under the provisions of this act, may be expended for the purchase of lands for sites or experimental farms, whenever authorized by the respective Legislatures of said States.

Second, No portion of said fund nor the interest thereon, shall be applied directly or indirectly, under any pretence whatever, to the purchase erection, preservation, or repair of any building or buildings.

Third, Any State which may take and claim the benefit of the provisions of this act, shall provide, within five years, at least not less than one college, as described in the fourth section of this act, or the grant to such State shall cease; and said State shall be bound to pay the United States the amount

received of any lands previously sold, and that the title to purchasers under the State shall be valid.

Fourth, An annual report shall be made regarding the progress of each college, recording any improvements and experiments made, with their costs and results, and such other matters, including State industrial and economical statistics, as may be supposed useful, one copy of which shall be transmitted by mail free, by each to all the other colleges which may be endowed under the provisions of this act and also one copy to the Secretary of the Interior.

Fifth, When lands shall be selected from those which have been raised to double the minimum price, in consequence of railroad grants, they shall be computed to the States at the maximum price, and the number of acres proportionately diminished.

Sixth, No State, while in a condition of rebellion or insurrection against the government of the United States, shall be entitled to the benefit of this act.

Seventh, No State shall be entitled to the benefits of this act unless it shall express its acceptance thereof by its Legislature within two years from the date of its approval by the president.

SEC. 6. AND BE IT FURTHER ENACTED, That land scrip issued under the provisions of this act shall not be subject to location until after the first day of January, one thousand eight hundred and sixty-three.

SEC. 7. AND BE IT FURTHER ENACTED, That the land officers shall receive the same fees for locating land scrip issued under the provisions of this act as is now allowed for the location of military bounty land warrants under existing laws: PROVIDED, Their maximum compensation shall not be thereby increased.

SEC. 8. AND BE IT FURTHER ENACTED, That the Governors of the several States to which scrip shall be issued under this act shall be required to report annually to Congress all sales made of such scrip until the whole shall be disposed of, the amount received for the same, and what appropriation has been made of the proceeds.

APPROVED JULY 2, 1862.

And to the following amendment:

AN ACT TO AMEND THE FIFTH SECTION OF AN ACT ENTITLED "AN ACT DONATING PUBLIC LANDS TO THE SEVERAL STATES AND TERRITORIES WHICH MAY PROVIDE COLLEGES FOR THE BENEFIT OF AGRICULTURE AND THE MECHANIC ARTS," APPROVED JULY TWO, EIGHTEEN HUNDRED AND SIXTY TWO, SO AS TO EXTEND THE TIME WITHIN WHICH THE PROVISIONS OF SAID ACT SHALL BE ACCEPTED AND SUCH COLLEGES ESTABLISHED.

1. *Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled—*

That the time in which the several States may comply with the provisions of the act of July two, eighteen hundred and sixty-two, entitled "AN ACT donating public lands to the several States and Territories which may provide

colleges for the benefit of agriculture and the mechanic arts," is hereby extended so that the acceptance of the benefits of the said act may be expressed within three years from the passage of this act, and the colleges required by the said act may be provided within five years from the date of filing of such acceptance with the Commissioner of the General Land Office; PROVIDED, That when any Territory shall become a State and be admitted into the Union, such new State shall be entitled to the benefits of the said act of July two, eighteen hundred and sixty-two, by expressing the acceptance therein required within three years from the date of its admission into the Union, and providing the college or colleges within five years after such acceptance, as prescribed in this act; PROVIDED FURTHER, That any State which has heretofore expressed its acceptance of the act herein referred to shall have the period of five years within which to provide at least one college, as described in the fourth section of said act, after the time for providing said college, according to the act of July two, eighteen hundred and sixty-two, shall have expired.

APPROVED JULY 23, 1866.

By Joint Resolution, approved November 1, 1866, the Legislature of Texas formally accepted the provisions of the Congressional Acts, and the State received from the General Government scrip for 180,000 acres of public land, the proceeds of which constitute the present permanent endowment fund of this College, and is invested in Texas seven per cent. gold frontier defense bonds to the amount of $174,000.

The Legislature fulfilled its obligations by passing "AN ACT to provide for the establishment of the Agricultural and Mechanical College of Texas," *approved* April 17, 1871, and by making liberal successive appropriations—aggregating $202,000—for the buildings and equipments necessary for putting the institution in operation. And the County of Brazos secured its location within its limits by donating to the State the present college farm, a tract of 2416 acres, five miles south of the town of Bryan.

Finally, the Constitution of 1876, Article VII, provided: "Section 13. The Agricultural and Mechanical College of Texas, established by an act of the Legislature, passed April 17, 1871, located in the County of Brazos, is hereby made and constituted a branch of the University of Texas, for instruction in agriculture, the mechanic arts, and the natural sciences connected therewith."

The College was formally opened for the reception of students October 4, 1876.

Although the Constitution provides that taxes may be raised for

the maintenance and support of the College, no money has ever yet been so raised; the annual expenses have been met solely by the income received from the federal endowment fund, and from the fees.

BOARD OF DIRECTORS.

1879-80

PRESIDENT, *Ex-officio.*

HIS EXCELLENCY ORAN M. ROBERTS, Governor of Texas,
AUSTIN.

MEMBERS, *Ex-officio.*

HON. JOSEPH D. SAYERS, Lieutenant Governor of Texas,
BASTROP.

HON. JOHN H. COCHRAN, Speaker House of Representatives,
DALLAS.

MEMBERS ELECTED BY THE LEGISLATURE.

First Congressional District, E. B. PICKETT, - Liberty.
Second Congressional District, W. H. LYDAY, - Bonham.
Third Congressional District, J. K. DIXON, - - Hillsboro.
Fourth Congressional District, J. W. DURANT, - Centreville.
Fifth Congressional District, A. J. PEELER, - Austin.
Sixth Congressional District, GEORGE PFEUFFER, New Braunfels.

OFFICERS OF THE COLLEGE.

JOHN G. JAMES, - - - - - -	*President.*
CAPT. G. T. OLMSTED, JR. (U. S. Army,)	*Commandant.*
D. PORT SMYTHE, M. D., - - - -	*Physician.*
H. H. DINWIDDIE, - - - - - -	*Treasurer.*
L. L. MCINNIS, - - - - - -	*Librarian.*
J. W. CLARK, - - - - - - - -	*Secretary.*
B. SBIZA, - - - - - - - -	*Steward.*
EMIL KELLNER, - - - - - - -	*Farm Supt.*
O. H. P. MINTURN, - - - - -	*Architect.*

H. C. EDRINGTON, - - *Bryan.*
FISCAL AGENT.

FACULTY.

JOHN GARLAND JAMES,
Professor Mental and Moral Philosophy.

JAMES REID COLE, A. M.,
Professor English Language, History and Literature.

CHARLES PATRICK ESTILL, A. M.,
Professor Ancient Languages.

HARDAWAY HUNT DINWIDDIE,
Professor Physics and Chemistry.

MARIE EWALD BERNHARD GEORGE GARTNER,
Professor Modern Languages.

D. PORT SMYTHE, M. D.,
Professor Biology, Hygiene and Veterinary Science.

CHARLES C. GEORGESON,
Professor Scientific and Practical Agriculture and Horticulture.

LOUIS LOWRY McINNIS, A. M.,
Professor Mathematics.

FRANKLIN VAN WINKLE, M. E.,
Professor Engineering, Mechanics and Drawing, and Superintendent of Machine Shops.

JOHN WOLLER CLARK,
Adjunct Professor Mathematics and Languages.

ROLL OF STUDENTS.

—SESSION 1879-80.—

Ackerman, William Franklin	San Antonio.
Adkins, Edmund William	Anderson.
Alexander, David Ellington	Marshall.
Alford, Albert Hulbert	Dallas.
Andrews, James Lafayette	Brazos.
Armstrong, Miller Francis	Buck Horn.
Armstrong, William Tucker	Buck Horn.
Arrington, John Smith	Alleyton.
Baker, Jesse Jane	Plantersville.
Baker, Searcy	Plantersville.
Banks, Aubrey Leonard	A. & M. C. of Tex.
Bell, Allen Dikeman	Montogmery.
Bennett, Lovick Thomas	Columbus.
Black, Malcolm	Caldwell.
Blakemore, Lucius Murray	San Marcos.
Blakemore, Thomas Elma	San Marcos.
Bledsoe, Frank Fears	Garden Valley.
Boren, Richard Long	Tyler.
Bradford, Joseph Simon	Hempstead.
Brown, Thomas Henry	Navasota.
Brown, William Harrison	Navasota.
Bryan, William Jonathan	Marlin.
Buck, James Whitworth	Hempstead.
Burger, Joseph Albert	San Antonio.

Burnitt, Martin Luther . . . . . Calvert.
Burnitt, Quitman . . . . . Calvert.
Caldwell, John Calhoun . . . . . Corpus Christi.
Calhoun, Francis Augustus . . . . . Navasota.
Campbell, William . . . . . Tilden.
Cate, James Shaw . . . . . Grapevine.
Chatham, Robert Carlton . . . . . Navasota.
Crisp, John Claiborne . . . . . Columbus.
Crisp, William Mebane . . . . . Columbus.
Cunningham, Alexander . . . . . Hempstead.
Darby, William Addison . . . . . West Point.
David, Leslie Price . . . . . Alleyton.
Davis, James Holt . . . . . Montgomery.
Davis, Jefferson . . . . . China Springs.
Davis, Joseph . . . . . Websterville.
Davis, Leroy R. . . . . China Springs.
Dibrell, Anthony. . . . . Galveston.
Douglas, William Pitt . . . . . Aetna.
Downs, Pinckney Lovick . . . . . Waco.
Dugan, George Henry . . . . . Sherman.
Dunn, James Blackman . . . . . Wheelock.
Dwyer, Charles Grattan . . . . . Brenham.
Evers, Adolphe . . . . . Marshall.
Fitzhugh, Edward Everett . . . . . Patton.
Fort, Foster Wilson . . . . . Waco.
Fort, William Aldridge . . . . . Waco.
Fox, Frank Leslie. . . . . Fort Worth.
Frazar, Newton Ford . . . . . Eagle Lake.
Freybe, Charles . . . . . Galveston.
Furrh, John William Franklin . . . . Elysian Fields.
Gary, Rodney . . . . . Galveston.
Gibson, Guilford Gustave . . . . . Richmond.
Greenwood, Paul Jones . . . . . Luling.
Guyler, Robert William . . . . . Bovine Bend.
Hall, Rufus Clarence . . . . . Elysian Fields.
Hand, Barton Bee . . . . . A. & M. C. of Tex.
Hanna, Robert . . . . . Groesbeck.

Hare, Silas Albert . . . . . Sherman.
Harrington, Silas Marion . . . . . Lebanon.
Harris, James Wiley . . . . . Marshall.
Harris, John Boone . . . . . Terrill.
Harris, Thomas Marcus . . . . . Brenham.
Hendricks, Wallace . . . . . Fort Worth.
Hill, James L. G. . . . . Winnsboro.
Holt, Harry . . . . . Velasco.
Homburg, William . . . . . Galveston.
Hoskins, Isaac Cole . . . . . Velasco.
Hoskins, William Wharton . . . . Velasco.
Houston, William Bryan . . . . . San Antonio.
Hurt, Walter . . . . . Galveston.
Kellner, Ernest L. H. . . . . A. & M. C. of Tex.
Kopke, Louis John . . . . . San Felipe.
Lane, Charles Dick . . . . . Bosqueville.
Levy, Pink . . . . . Jewett.
Lipscomb, Robert S. . . . . Grapevine.
Martin, Duncan . . . . . A. & M. C. of Tex.
Martin, Robert . . . . . Hearne.
Martin, Robert Lee . . . . . Galveston.
Matkin, Charles Thomas . . . . . Hearne.
McCall, Shelby W. . . . . Austin.
McDaniel, Eugene . . . . . Waco.
McLemore, John Clifton . . . . Galveston.
McNutt, James Jefferson . . . . . Sutton.
Miller, Charles Stonewall . . . . Bellville.
Miller, Hermann Julius . . . . . Bellville.
Moore, John Matthew . . . . . Richmond.
Morrison, William Gwyn . . . . . Navasota.
Munson, Joseph Waddy . . . . . Oyster Creek.
Neblett, Stirling Lee . . . . . Navasota.
Newsom, Joady . . . . . Brazos.
O'Neal, William Alexander . . . . Butler.
Parker, Benjamin Joseph . . . . . Oakwood.
Parker, Charles Douglas . . . . . Houston.
Parker, George A. F. . . . . Houston.

... Lower	Ad. Hall.
Persons, Levin	Fulton, Ark.
Pfeuffer, George Sam Ho...	New Braunfels.
Price, Thomas Moore	Bastrop.
Pritchford, Frank Ashley	New Orleans, La.
Raley, Jesse Andrew	Winnsboro.
Randall, Harvey Gregg	Dallas.
Richardson, Robert McAlpine	Fort Worth.
Robinson, Cornelius Ware	Cold Springs.
Robinson, James Henry	Cold Springs.
Robinson, Lee	Cold Springs.
Rogers, Manuel	Corpus Christi.
Routt, John Alexander	Chappell Hill.
Sanders, Caldwell Calhoun	Jonesville.
Sandidge, Claiborne	Fort Worth.
Sawyer, Robert	Dresden.
Seale, Robert Henry	Brazos.
Seymore, Samuel King	Columbus.
Sharp, John Fancette	Livingston.
Shaw, Nicholas Augustus	Clarksville.
Shindler, Charles Franklin	Hempstead.
Shorp, John William	Luling.
Small, William Thompson	Fort Worth.
Smith, Thomas Poland	Buck Horn.
Smith, William Sumner	Buck Horn.
Stemmons, Beverly Lewis	Dallas.
Stinnett, Horatio	Sherman.
Stockton, Dow Barnett	Brazos.
Story, William Fletcher	Cotton Gin.
Strelsky, Antone	Rockdale.
Talbott, Frank	Calvert.
Thomason, John William	Huntsville.
Thompson, Archibald George	Austin.
Thompson, Frank Enos	Nelsonville.
Vance, Robert Smith	Circleville.
Van Zandt, Kleber	Fort Worth.
Waters, Thomas	Mexia.

Watson, David Hughes	Brenham.
Watson, Robert Alford	Bastrop.
Winston, Sidney Johnston	Richmond.
Woessner, Walter	Corpus Christi.
Womack, Robert Noland	Mexia.
Wood, Oliver H. P.	Hempstead.
Wood, Rufus Cole	Hempstead.
Yarbrough, James Wiley	
Talbott, A.	Calvert.

TOTAL, 144.

GRADUATES.

Graduates in Academic Schools; —June 23, 1880.

SCHOOL OF ENGLISH.

W. H. Brown,	Navasota.
L. J. Kopke,	San Felipe.
C. S. Miller,	Bellville.
F. F. Bledsoe,	Garden Valley.
D. E. Alexander,	Marshall.
E. E. Fitzhugh,	Patton.
T. E. Blakemore,	San Marcos.

SCHOOL OF MORAL PHILOSOPHY.

W. H. Brown,	Navasota.
E. E. Fitzhugh,	Patton.
C. L. Miller,	Bellville.

SCHOOL OF GREEK.

F. F. Bledsoe,	Garden Valley.

SCHOOL OF LATIN.

D. E. Alexander,	Marshall.
C. S. Miller,	Bellville.
E. E. Fitzhugh,	Patton.

SCHOOL OF ENGINEERING.

W. H. Brown,	Navasota.
L. J. Kopke,	San Felipe.

SCHOOL OF MATHEMATICS.

E. E. Fitzhugh,	Patton.
G. H. Dugan,	Sherman.
D. E. Alexander,	Marshall.
T. E. Blakemore,	San Marcos.

SCHOOL OF SPANISH.

L. J. Kopke,	San Felipe.

Titled Graduates;—June 23, 1880.

CIVIL ENGINEERS.

William Harrison Brown,	Navasota.
Louis John Kopke,	San Felipe.

PLAN OF INSTRUCTION.

	AGRICULTURE.	MECHANICS.
FRESHMAN CLASS.	FIRST TERM. Arithmetic, English Grammar, Descriptive Geography, Drawing of Maps and Charts, Declamations and Compositions, Elocution and Spelling, Elementary Agriculture and Mechanics. SECOND TERM Algebra, Physical Geography, History of United States and Texas, Drawing—Landscapes, figures, etc., English Grammar, Declamations and Compositions, Elocution and Spelling, Elementary Agriculture and Mechanics.	FIRST TERM. Same as Agricultural Course. SECOND TERM. Same as Agricultural Course.
SOPHOMORE CLASS.	FIRST TERM. Geometry, General History, Physics and Chemistry, Compositions and Declamations, Drawing. Agriculture, Horticulture and Garden Culture. SECOND TERM. Trigonometry, Land Surveying and Leveling, Physics and Chemistry, General History, Declamations and Compositio. s, Drawing. Agriculture, Horticulture, and Garden Culture.	FIRST TERM. Geometry, General History, Physics and Chemistry, Drawing—Topographical and Mechanical, Mechanics and Shop Instruction Compositions and Declamations. SECOND TERM. Trigonometry, Land Surveying and Leveling, Physics and Chemistry, General History, Declamations and Compositions, Mechanical Drawing, Elements of Mechanics and Shop Instruction.
JUNIOR CLASS.	FIRST TERM. Rhetoric, Analytical Geometry, Botany, Agricultural Chemistry, Scientific and Practical Agriculture, Horticulture and Stock Management, Forestry, Book-keeping, Monthly Essay. SECOND TERM. Comparative Anatomy and Physiology, English Literature, Geology, Analytical Chemistry, Logic, Physical Geography, Meteorology and Geology of Texas, Agriculture, Horticulture and Stock Management, Monthly Essays.	FIRST TERM. Rhetoric, Analytical Geometry. Drawing — Original Designs for Machines and Structures, Scientific and Practical Mechanics, Shop Instruction, Book-keeping, Monthly Essay. SECOND TERM. Descriptive Geometry and its Applications, English Literature, Logic, Geology, Drawing—Original Designs for Machines and Structures, Physical Geography, Meterology and Geology of Texas, Scientific Mechanics, General Mechanism and Shop Instruction, Monthly Essays.

	AGRICULTURE.	MECHANICS.
SENIOR CLASS.	FIRST TERM. Political Economy, English Literature, Calculus (optional), Farm Engineering, Veterinary Anatomy and Materia Medica, Experimental Agriculture and Horticulture, Constitutions of United States and Texas, Professional Papers. SECOND TERM. Mental and Moral Philosophy, Elements of Astronomy, English Literature, Laws of Texas on Stock, Fish, Game and Irrigation, Veterinary Pathology, Surgery and Practice, Experimental Agriculture and Horticulture, Graduation Thesis.	FIRST TERM. Political Economy, English Literature, Calculus, Constitution of United States and Texas, Civil Engineering, Shop Constructions in Wood or Metal from Original Designs, Professional Papers. SECOND TERM. Mental and Moral Philosophy, Elements of Astronomy, English Literature, Civil Egineering, Applied Mechanics, Shop Constructions in Wood or Metal from Original Designs, Graduation Thesis.

Every student entering the College will be required to take one of these two courses; and in connection with it may study one or more of the following optional branches, in which full instruction will be given, viz: German, Spanish, French, Latin, and Greek.

During the session the College physician will deliver to the students a course of lectures on hygiene.

The system of government and discipline will be military, in conformity with the act of Congress.

DEPARTMENTS OF INSTRUCTION.

DEPARTMENT OF PHILOSOPHY AND POLITICAL ECONOMY.

President John G. James.

The subjects taught are:

I. PSYCHOLOGY.—An outline only will be attempted. Consciousness is assumed as the basis of a true psychology, and the Intellectual Powers viewed as modes of it. The Sensibilities and the Will are next treated, followed by the course in

II. MORAL PHILOSOPHY, in which the intuitional theory of morals is taught, with the criticism of utilitarianism. Lectures on the history of philosophical speculation will be given; and original criticisms and essays upon ethical problems required from the students.

TEXT-BOOKS.—Calderwood's Hand-Book of Moral Philosophy, Ueberweg's History of Philosophy.

III. POLITICAL ECONOMY.—This subject will be taught by lectures based upon Mill's Principles of Political Economy, but the views of opposing economists will be given. The relations of Capital and Labor, and the various systems of Currency, Banking, Taxation, Tariff, &c., are discussed with special reference to the political and social institutions of America, and its industrial interests.

DEPARTMENT OF ENGLISH.

Professor J. R. Cole, A. M.

The following subjects are taught:

I. THE ENGLISH LANGUAGE.—Embracing the grammatical and rhetorical structure of the language, its history and literature, accompanied with constant exercises in Spelling, Elocution, Com-

position and Declamation. Class readings from Chaucer to Tennyson are required, and from time to time the Professor delivers critical and exegetical lectures on some of the masterpieces of English literature.

TEXT-BOOKS.—Quackenbos' Grammar; Creery's Grammar School Speller and Dictation, James' Southern Selections for Reading and Oratory, Hill's Elements of Rhetoric and Composition, Shaw's English Literature, Chaucer, Shakspeare, Tennyson, Worcester's Dictionary.

II. HISTORY.—The object in this course is to give the student a thorough knowledge of the history of his own country and of England, and an outline of the world's history, ancient and modern. Oral lectures and historical and chronological charts will be systematically used in connection with the text-books.

TEXT-BOOKS.—Stephens' History of the U. S., Green's History of the English People, Wilson's Outlines of History, Thrall's Texas.

III. LOGIC.—The *Inductive Logic*, its nature and methods, will receive special attention, and some instruction given in Deductive Logic.

TEXT-BOOKS.—Jevons' Logic, Mills' Logic.

DEPARTMENT OF ANCIENT LANGUAGES.

Professor C. P. Estill, A. M.

This department, which is optional, gives instruction in the Greek and Latin languages, the regular course in each being four years in length. The Geography, Political History, Antiquities and Mythology of Greece and Rome are also taught in their proper connection. In addition to the portions of the several authors read in the class-room, extra and parallel private reading is required of the advanced classes. Weekly exercises in Latin and Greek composition constitute an important feature of the course. No previous study of either language is necessary to enter this

department, and students may enter any class for which they are prepared.

GREEK.

FRESHMAN.—Goodwin's Greek Grammar and Reader, Xenophon's Anabasis, White's Greek Lessons, Geography, Antiquities, &c.

SOPHOMORE.—Xenophon's Memorabilia, Hadley's Greek Grammar, Boise's Exercises in Composition, Homer's Iliad, Greek History.

JUNIOR.—Demosthenes, Sophocles, Greek History, Compositions.

SENIOR.—Thucydides, Euripides, History of Greek Literature, Compositions.

LATIN.

FRESHMAN.—Bingham's Grammar, and Reader, Cæsar, Geography and Antiquities of Roman Empire.

SOPHOMORE.—Gildersleeve's Grammar, Virgil, Cicero's Orations, History and Mythology of Rome. Latin Prose Composition.

JUNIOR.—Horace, Gildersleeve's Grammar, Germania and Agricola of Tacitus, Roman History, Prose Composition.

SENIOR.—Livy, Tacitus, Lectures on Roman Literature, Compositions.

DEPARTMENT OF CHEMISTRY AND PHYSICS.

Professor H. H. Dinwiddie.

Work in this department will commence with the study of Chemical Physics, passing then to Theoretical and Descriptive Chemistry and Stoichiometry. The attention of students will be directed to the historical development of the science and to the phases of chemical theory which have successively obtained among scientists. During this part of the course there will be constant practice in the use of symbols and chemical calculation. Illustrative experiments will not be made merely by the professor in the presence of the class, but students will be required under direction to make them for themselves. Special study will be given to technical processes and the construction, arrangement and working of apparatus for the manufacture of chemicals for commerce.

After a fair knowledge of general principles and facts has been

acquired, Practical Chemistry will be taken up, and the instruction will consist of actual work in the laboratory. It will commence with the use of the blowpipe, simple glass-blowing, and fitting up of apparatus, continuing through a complete course of analysis, wet and dry, qualitative and quantitative.

Advanced students will be required to investigate specialties, to keep careful notes of their work, and to present results, more or less original, in the form of memoirs to be read before the class or handed to the professor. Agricultural students will devote their time more particularly to the anylysis of soils, manures and plants. Mechanical students may take as specialties any of the innumerable chemical questions connected with mechanical constructions. Each student will keep a careful record of his laboratory.

In the department of Physics there will be a full course illustrated by the excellent apparatus of the College. The shops of the mechanical department will be most useful as a laboratory for the practical application of this course. With their aid the students will be encouraged and required to devise and construct special pieces of apparatus for illustration.

It will be seen that the aim of these courses is to equip their graduates with such practical knowledge and skill as will be available at once upon leaving College.

TEXT-BOOKS.—Roscoe's Chemistry, Caldwell's Agricultural Chemistry, Church's Laboratory Practice, Fleischer's Volumetric Analysis, Deschard's Physics, Pickering's Manipulations, Frick's Technics.

DEPARTMENT OF MODERN LANGUAGES.

Prof. M. E. B. G. Gartner.

This department comprises the French, German, and Spanish Languages, and its object is to teach a knowledge of the grammatical, rhetorical and idiomatic structure of those languages, and sufficient facility in reading, writing and speaking them to make them

practically useful. To the end that each may be acquired as a living language constant oral and conversational exercises will accompany the regular class work in reading and composition. Declamations in the respective tongues will be required at stated intervals, and in the final year no language will be used in the classroom but the one under study. Well defined courses of private parallel reading will be selected by the Professor. The recitations will be rendered as interesting as possible by lectures on comparative philology, and by researches in geography, history, mythology, and in biography of the different authors from whose writings selections are read.

The studies of this department are optional, and the course in each is three years.

GERMAN.

SOPHOMORE.—Donai's Grammar, Worman's Collegiate Reader. (Begun.)
JUNIOR.—Campbell's Grammar, Worman's Reader. (Completed.)
SENIOR.—German Literature, Schiller's William Tell. Hodge's Course in Scientific German, Goethe's Egmont.

FRENCH.

SOPHOMORE.—Magill's Grammar, Worman's Echo de Paris.
JUNIOR.—Maurice-Poitevin's Grammaire Francaise, Sue's Exercises on French Syntax, Paul et Virginie.
SENIOR.—Review on Grammar, French Literature, Fenelon's Telemaque, Racine, Corneille.

SPANISH.

SOPHOMORE.—De Torno's Grammar, Morales' Progressive Reader.
JUNIOR.—Review on Grammar, Morales' Reader, Don Quixote.
SENIOR.—Don Quixote, Lope's Estrella de Sevilla, Ticknor's Spanish Literature.

DEPARTMENT OF BIOLOGY, HYGIENE, AND VETERINARY SCIENCE.

Prof. D. Port Smythe, M. D.

Instruction will be given in the following subjects:

I. ZOOLOGY.—The course begins with descriptive Zoology—the external forms, outward relation, and geographical distribution of animals. Comparative Zoology is then taken up, embracing the

principles of classification, the relations of the different parts of the animal creation, and their most important physiological functions. Those animals of economic interest receive special attention. Comparative anatomy is taught mainly by lectures, skeletons and dissections. The general and special facts of Biology, and the anatomical structure of the various organs are discussed in detail, and a short course in Embryology given. Each student is required to collect, prepare, and indentify specimens of the animal kingdom.

TEXT-BOOKS.—Huxley's Vertebrates, Marshall's Diagrams, Nicholson's Zoology. Jordan's Manual of the Vertebrates of North America is used for identifying specimens.

II. HYGIENE.—During the session a series of lectures on the laws of health will be delivered to the whole body of students.

III. VETERINARY SCIENCE.—The anatomy and physiology of the domestic animals—the horse, ox, sheep, pig— their organisms, the evolution of the different systems of organs, and comparative embryology will be taught, systematic and practical histology and functional physiology receiving special consideration. The student is familiarized with the use of the microscope in the study of the minute anatomy of the animal tissues, and regular laboratory work in the dissection and study of typical organisms. The preparation of tissues, &c., is required.

Veterinary Pathology includes the study of the nature, causes, symptoms, prevention, and treatment of the general and epizootic diseases of the domestic animals; parasites and the affections which they cause, and how to prevent and destroy them; microscopic study of pathological specimens.

Lectures on Heredity are given, treating of transmissible qualities, inherited traits and habits; hereditary diseases and defects; reversion, prepotence, crossing, and the production of races.

Veterinary Materia Medica teaches the preparations, uses, actions, and doses of the principal medicines used in veterinary practice. The theory and practice of Veterinary Surgery is also taught. And the student will be made as familiar with the use of instruments and the administration of medicines as the means at hand in the way of subjects will permit.

TEXT-BOOKS.—Owen's Comparative Anatomy; Wythe on the Microscope; Youatt on the Horse; Randall's Sheep-Husbandry; Harris on the Pig; Jennings' Cattle and their Diseases.

Department of Agriculture and Horticulture.

Professor C. C. Georgeson.

This Department provides theoretical and practical instruction in the following branches:

I. Agriculture.—The main object will be to teach the principles of scientific and economic husbandry, to cultivate a love of country home life and rural pursuits, and to impress young men with the true importance and dignity of this the greatest industry of our State. The instruction will be given largely by lectures, experiments, and practical application on the College farm of the principles taught in the class-room. The course will embrace the history of agriculture, soils, their origin, mechanical and chemical constituents; relations of air, moisture, heat, light and electricity to vegetable growth; preparation of lands for crops, cultivation of crops, harvesting and marketing, rotation of crops; location and construction of farm dwellings, fences, roads; manufacture and use of fertilizers; irrigation and drainage; use and preservation of farm implements and stock; bee culture; dairy husbandry; and general farm economy and management.

Text-books.—Copeland's Agriculture, Low's Practical Agriculture, Stephens' Book of the Farm, French's Farm Drainage, Stewart's Farm Irrigation, Flint's Milch Cows and Dairy Farming, Johnston's "How Crops Grow."

II. Horticulture.—The gardens, orchard, and vineyard furnish excellent facilities for making the instruction in this subject thoroughly practical. Students will be taught the location, drainage and preparation of gardens, sowing seeds, culture of vegetables, mulching, construction of compost heap, use of natural and artificial manure, construction and use of hot-beds, cold frames and green houses, transplanting, how to obtain new varieties by cross-breeding, propagation of fruit and ornamental trees, shrubs and herbs by grafting, budding, layering, and cuttings, the gathering, storing and marketing of fruits and vegetables, best sites for orchards, kind of trees to set out, orchard culture, pruning, etc., best management for each kind of large and small fruit. To which is added a short course of lectures on Botany,

and on the insects injurious and those beneficial to the farmer.

Landscape gardening and forest tree culture will be taught practically, in laying off, ornamenting, and improving the extensive grounds of the College.

TEXT-BOOKS.—Downing's Fruits and Fruit Trees, of America, Bryant's Forest Tree Culture, Barry's Fruit Garden, Baltets Art of Budding and Grafting, Henderson's Gardening for Profit.

DEPARTMENT OF MATHEMATICS.

Professor L. L. McInnis.

Instruction in this department will have for its aim, to lead the student into the habit of thoroughly analyzing every subject. He will be taught to accept nothing as true in mathematical science unless rigidly demonstrated, and he will be required so to demonstrate all rules and principles before applying them to the solution of problems. And he will be made to realize the importance of this science in the practical affairs of life, as well as its value in strengthening and disciplining the intellectual powers, by carefully selected and original problems throughout the course, involving the application of its principles to the arts, industries and applied sciences of to-day. A series of lectures on the History, Utility and Philosophy of Mathematics will be given.

The Professor offers a gold medal, to be competed for by the members of the Sophomore and Junior classes.

TEXT-BOOKS.—Sanford's Arithmetic; Davies' Bourdon; Venable's Geomsetry; Schuyler's Trigonometry; Church's Analytical Geometry; Church-Descriptive Geometry, Shades, Shadows and Perspective; Church's Calculus.

DEPARTMENT ENGINEERING, MECHANICS, ADN DRAWING.

Professor Franklin Van Winkle, M. E.

The following subjects are taught:

I. DRAWING.—Instruction begins with the drawing of maps

and charts in inks and colors, lettering, free-hand drawing of landscapes, figures, and topography as a training for the hand and eye preparatory to the mechanical drawing for the professional engineer and machinist.

In mechanical drawing is taught the use of instruments in drawing right lines, curves, geometrical constructions, and elementary projections; and then to make working drawings, from actual measurements of parts of machinery, bridges and other structures, giving plans, elevations, cross-sections, and perspectives. The student is then required to prepare original designs for machinery, mill-work, arches, bridges, and such other structures as come within the province of the engineer and machinist.

II. CIVIL ENGINEERING.—An elementary course in this branch is all that will be attempted; beginning with Surveying and Leveling, practically applied in the surveying, partition, and location of farms and wild lands, and the construction of irrigation ditches, drains, county roads and bridges. Then follow the consideration of the materials used by the civil engineer in his constructions, their resistance and forms of greatest strength; the stability of walls and arches; location of railroads, canals, bridges, and dams; and the principles of construction of roads, roofs, bridges, dams, and tunnels, shafts and galleries of mines. The department is supplied with all the instruments needed by the surveyor and engineer, and their practical use by the student in actual field work forms a valuable and prominent feature of the course.

TEXT-BOOKS.—Davies' Surveying and Leveling; Mahan's Civil Engineering; Wood's Resistance of Materials, Wood's Theory of Roofs and Bridges; Tredgold's Carpentry.

III. MECHANICS.—Instruction is given in the nature of the materials used in constructing, locating and operating machinery, and the tests of their strength and quality; the principles of mechanism and their practical application in the construction and use of tools and machinery; heat as a source of power, with steam and hot-air motors; hydraulic motors, water supply and reservoirs; electric motors, and wind-mills. All students in this Course are taken through a thorough course of shop instruction in the use of tools and steam, wood and metal working machinery,

and before graduating each one must construct from his own designs, some tool, implement, or piece of machinery.

TEXT-BOOKS.—Wood's Elementary Mechanics, Bourne on the Steam Engine, Fairbairn's Mills and Mill Works, Rankine's Prime Movers, Wood's Analytical Mechanics.

INDUSTRIAL DEPARTMENT.

Professors Georgeson and Van Winkle.

The duties of this department are to a great extent planned with reference to illustrating and applying the scientific principles taught in the class room. All *instructive* labor is regarded as compensated by the instruction given and the skill acquired. Manual labor is not compulsory, but students who desire to help defray their expenses by work can do so by taking part in the *uninstructive* labor, such as ordinary farm operations, repairing, carpentering, painting, janitor's duties, and stock management, at fair wages. This can be done at extra hours and on Saturdays without interference with regular studies and duties.

Instructive and uninstructive duties will be supplied in:

1. Agriculture—general farm operations.
2. Horticulture—garden, vineyard, and fruit culture.
3. Stock and dairy management.
4. Mechanics—carpentry, fencing, painting, &c.

Four thousand dollars has just been appropriated by the Board of Directors for the equipment of the mechanical department on a useful basis, and it will at once be expended for the necessary tools, machinery, engine and materials. The shops in which systematic practical instruction is to be given are:

1. Carpenter shop.
2. Vise shop.
3. Forge shop.
4. Steam, Wood, and Metal Working Machinery.

The Directors have fixed the maximum rate of compensation per

hour in the agricultural department at 15 cents, in the mechanical, 20 cents.

The object is to assist worthy students in every way possible, but the College cannot guarantee to any one student sufficient labor to meet *all* his expenses, as labor can be furnished only as long as the interests of the institution permit it. A small amount of labor annually is expected from each student, to assist the Professor in the ornamentation and improvement of the grounds.

Department of Military Science.

Capt. George T. Olmsted, Jr., U. S. Army.

The instruction in this Department is in conformity with the Act of Congress, and is under the charge of an officer of the Army detailed for the purpose by the Secretary of War. No course of class-room studies is given and the instruction is confined to the practical drills on the parade ground, which occur after study hours in the fall and spring, and in no way interfere with studies. The military system is used here simply as a means of discipline and wholesome restraint, at the same time it develops in the student a high sense of honor, a manly bearing, and a proper self-respect and self-reliance, which grow out of a consciousness of personal responsibility.

Commercial Department.

In this department will be taught the science of Single and

Double Entry Book-keeping, the laws governing commercial transactions, and the Philosophy and Morals of Business.

The method of instruction will be by lectures and recitations, with exercises in opening, conducting and closing books, and in the preparation of accounts current and all other business forms.

TEXT-BOOKS.—Mayhew's Book-keeping.

MISCELLANEOUS.

DIPLOMAS AND CERTIFICATES.

The Diploma of the College will be conferred upon all students who complete either of the prescribed four years' courses of study, and pass satisfactory examinations on all the branches embraced therein. Each candidate for graduation is required to submit to the approval of the Faculty an essay, composed by himself, on some literary or scientific subject, which essay must be read by the author on Commencement Day, if so ordered.

To every student who completes satisfactorily any one of the optional studies—French, German, Spanish, Latin, Greek—a Certificate of Proficiency on that subject will be granted.

Each student receiving a Diploma will be required to pay $5 00 therefor. No academic honor, however, will be conferred on any Student who shall prove deficient in conduct for the session.

MARKS AND EXAMINATIONS.

All recitations throughout the session are graded and recorded. The maximum for the day, week, month, quarter, term, and session is 10, which indicates perfect recitations; imperfect recitations are expressed in decimal fractions of the maximum.

Two general examinations of each class are held during the session, which every student is required to attend. The first, called the Intermediate, is held in January, and embraces the sub-

jects of instruction in the first term; in making out the annual class grade, the weight of one quarter's marks is attached to this examination. The second, called the Final, is held in June, and embraces the subjects taught during the whole session; in making the annual class grade, the weight of one term's marks is attached to this examination. These examinations are mainly in writing, and the questions propounded have numerical values attached.

A monthly report is mailed to the parents or guardian of each student, showing his class standing, demerits, and health.

Organization and Government.

The students are organized into a battalion of two or more companies, under the immediate command of the Commandant. The commissioned and non-commissioned officers are students, who are promoted to those positions for their soldierly qualities, due regard being had to their length of service.

The uniform is of cadet gray, and is cheap, neat, and serviceable. No other dress than that which is prescribed shall be worn by students after they have received their uniforms.

As this institution is in no sense an asylum for vicious, depraved, or unmanageable boys, no such persons will ever be admitted, knowingly, under any conditions; and a student who shows himself insensible to the obligations of honor, good morals, and self-respect is at once sent home.

Manly sports and exercises, when not in conflict with studies and duties, are properly encouraged.

Students receive the admonition and counsel of the President before being subjected to any penalty, except in case of flagrant offenses. Those who are habitually neglectful of their duties, or who do not regularly attend their classes, will be required to withdraw from the College.

No student is allowed to leave the College during the session without the permission of the President, on application through the Commandant.

The strictest attention to study and the most exact punctuality in attendance on recitations, and other duties, will be made the

condition of every student's continuance at the College; and any student who without authority absents himself from recitation or any other duty, deserts his class, or refuses to attend when warned, shall be dismissed, or less severely punished, at the discretion of the Faculty.

Students are prohibited, under penalty of dismission, from having in their possession ammunition, weapons or arms not issued for the performance of military duty; nor shall these be retained loaded in quarters under any pretext.

Students are prohibited entering into combinations under whatever pretext. One who shall begin, excite, cause or join in any boisterous or riotous conduct, or become a party to any agreement to avoid or violate any regulation, to hold no intercourse with a comrade, or to do any act to the prejudice of good order and military discipline, shall be dismissed.

No student shall have in his possession, or play at, cards, or games of chance, engage in a raffle, or in any manner wager money or other things, on penalty of dismission.

Permission to attend private parties, or places of public amusement, will not be granted during the term.

No Cadet can be granted a leave of absence during a term of twenty weeks, without an urgent necessity.

A student who shall drink, or bring, or cause to be brought within the Cadet's limits, or have in his room, or otherwise in his possession, any fermented or intoxicating liquor, or fruits or viands preserved in intoxicating liquor, shall be dismissed.

A student who shall cut, mark, or otherwise injure or deface the buildings, furniture or appurtenances; the trees, shrubbery, green-sward, grounds, fences; stables, or out-houses; or who shall lose, injure, destroy, or improperly dispose of the arms, accoutrements, or other property of the College, shall make good all damage, and be dismissed or otherwise punished, according to the nature of the offense.

To each recorded delinquency a number of from one to ten proportional to the degree of the offense in a moral and military view, is assigned to express demerit.

If any student receives 150 demerits for the whole or any part of a

half-year, or 250 for a greater period, he shall be declared deficient and dismissed.

Religious and Moral Culture.

Prayers are held every morning in the Chapel, which the students are required to attend Every Sunday afternoon there is preaching in the Chapel by one of the ministers from Bryan, and all students are expected to be present. And the Faculty will try with all the means in their power to protect and develop the moral character of those committed to their charge. Classes for Sunday Bible instruction will be formed, which students are invited to join.

Literary Societies.

There are two literary socities in the College, the Austin and the Calliopean. They meet weekly in their respective halls for practice in debate, literary composition and declamation.

Location.

The College is situated on a tract of land of 2416 acres belonging to the State, five miles south of the town of Bryan. The Houston & Texas Central Railway passes through the grounds, and has a depot, College Station, within a quarter of a mile of the College. Daily passenger trains make close connection with the entire system of railroads of the State, thus rendering the College accessible from every section.

The postoffice, as well as depot, for the College is *College Station* and *not Bryan.*

Library and Reading Room.

Through the liberality of the Legislature a valuable Library and

Reading Room have been provided for the use of the students, and large additions will be annually made.

The Library now comprises standard works of History, Biography, Agriculture, Mechanics, Engineering, Mathematics, Natural Sciences, Law and Political Economy, Mental and Moral Philosophy, Poetry, General Literature, and Reference.

Among the Periodicals kept on file in the Reading Room are

ENGLISH.

London Times. Quarterly Journal of Pure and Applied Mathematics. Canadian Monthly. Engineering. Chemical News. Agricultural Gazatte. Nature.

AMERICAN.

American Journal of Science and Art. Popular Science Monthly. United Service Magazine. Scribner's Monthly. Harper's Monthly. Lippincott's Monthly. Sunday Magazine. Southern Historical Society Papers. Rural New Yorker. Prairie Farmer. Massachusetts Ploughman. Industrialist. Farmer's Review. Scientific American. The Nation. Puck. Harper's Weekly. Philadelphia Times. New York Herald. Louisville Courier-Journal. Southern Churchman. Christian Observer. Religious Herald. Christian Advocate.

Gifts of books and magazines will be thankfully received. Back numbers of literary and scientific periodicals will be especially useful in completing the files already begun.

Admission of Students.

Applicants for admission must have a fair knowledge of the elementary English branches; must be free from any disease, deformity or permanent injury, which would render them unfit for the prescribed duties; and must present satisfactory testimonials of good moral character. While boys under fifteen years of age are not recommended to enter, the admittance of students will be made to depend more on their state of preparation, capacity to discharge the duties required, character and general habits, than on their age.

Students supply their own towels, pillow-cases, sheets, blankets,

clothes bag, comb and brush. All articles of clothing and bedding should be plainly marked in indelible ink with the owner's name.

Fifth Annual Session

Commences on October 1, 1880, and ends on the fourth Wednesday in June, 1881. Students can enter at any time, and will be charged from date of entrance only; but it will be greatly to their advantage to report at the beginning of the session.

Expenses.

All students are admitted free of charge for tuition and quarters, but each must pay in advance an annual matriculation fee of $20.00, and a quarterly incidental fee (embracing medical attention) of $3.25.

Board, fuel, washing and lights for the academic year, $127.00

Payments Due Quarterly in Advance.

First Quarter	$55 00
Second Quarter	35 00
Third Quarter	35 00
Fourth Quarter	35 00
Total College charges for the year	$160 00

Only one uniform—the former undress suit of cadet gray—is required, which costs $13.00.

Text-books can be purchased at the College at regular retail rates.

There are no extra charges of any kind, but wilful damage to public property will be assessed against students.

No part of matriculation and incidental fees will be refunded students who leave or are dismissed before the session ends.

All remittances should be made directly to the President.

PRESIDENT'S REPORT.

A. & M. COLLEGE OF TEXAS,
College Station, Texas, July 1, 1880.

To His Excellency, O. M. Roberts, Governor of the State of Texas, and Ex-Officio, President of the Board of Directors:

SIR: I respectfully submit this, the Fourth Annual Report of the Agricultural and Mechanical College of Texas, for the information of your Honorable Board, and to comply with the requirement of the Congressional act of 1862, section 5, which says:

Fourth. An annual report shall be made regarding the progress of each college, recording any improvements and experiments made, with their cost and result, and such other matters, including state industrial and economical statistics, as may be supposed useful; one copy of which shall be transmitted by mail free by each to all the other colleges which may be endowed under the provisions of this act, and also one to the Secretary of the Interior.

To exhibit more completely the operations and present condition of the College, I annex hereto for reference the annual reports of the heads of its various departments.

A little more than six months ago this institution was turned over to the present faculty to mature by the end of the next session

A PLAN OF REORGANIZATION.

They found that it had been organized and conducted upon the university plan of elective studies, with the classics as its great central idea; that no systematic and practical instruction had ever been given in what the law commanded should be the "leading object"—agriculture and the mechanic arts; and that instead of popularizing the study of agriculture, horticulture, stock-breeding, and the mechanic arts, and thus fostering a juster appreciation

of the dignity and importance of these great industrial pursuits which must ever be the foundation of the state's material prosperity, the college had sedulously cultivated a sentiment antagonistic to the development of these branches of study, and which continually decried them. It was in spirit and in fact, as far as circumstances permitted, a strictly literary college—top-grafted with a strongly prominent military feature. That it should fail to secure its support in an intelligent public opinion, while thus conducted in the face of the mandatory legal enactments under which it was established and endowed, is not to be wondered at.

The Morrill bill explicitly requires that the interest of the endowment fund "shall be inviolably appropriated by each state which may take and claim the benefit of this act, to the endowment, support and maintenance of at least one college where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in such manner as the Legislatures of the states may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits in life."

Our state received the benefit of that act by accepting, in 1866, its provisions, and establishing, in 1871, the Agricultural and Mechanical College of Texas. And, to leave no doubt as to the real object of the college and its true relation to the educational system and industrial interests of the state, the constitution of 1876 declares:

> Section 13. The Agricultural and Mechanical College of Texas, established by an act of the Legislature, passed April 17, 1871, located in the county of Brazos, is hereby made and constituted a branch of the University of Texas, for instruction in agriculture, the mechanic arts, and the natural sciences connected therewith.

With marked liberality the state has equipped the college with commodious buildings, a well stocked farm, laboratories, apparatus, instruments, means for purchasing tools and machinery, and all else necessary for complying with the intention of the law; but it has made no provision for prominently developing the literary side of the institution either by adding to the endowment fund, or paying the salary of a single professor. Simple honesty,

therefore, requires that the trust imposed by the act of Congress (and Texas is a bound trustee in the matter) should be strictly discharged, and that, without excluding purely literary studies, the main stress of the teaching and influence should fall upon the technical branches specified. There is already a wide demand in our state for just such scientific and practical industrial education, and if there exists a demand equally as wide for a broader and more liberal literary and professional culture than existing colleges within our limits can supply, then the time has come for the establishment of the State University; it has an ample endowment fund already provided. For this college to do thoroughly and usefully its own distinctive work will tax to the uttermost its present limited resources in money and instructors.

Nearly every state in the Union has taken advantage of the Morrill act. In many the attachment of a so-called agricultural department to an existing institution was deemed a compliance with the law. The result in every instance almost has been a disastrous failure, due to the overshadowing influence of the literary features. Over fifty colleges have received this endowment, and of them all the only ones which have proved eminently successful are those which were organized and conducted as separate and independent colleges, for the purposes specified in the act, and for no others. And this is very pointedly put by President William Johnston, of the Ontario School of Agriculture, who in his report on Agricultural Education in Germany and the United States (1879), to the Hon. Commissioner of Agriculture of Ontario, Canada, thus accounts for the failure of so many of our agricultural colleges: "The great faults of the majority of them are the attempts to teach too many subjects superficially; to give too many optional courses, to leave out a course of farm apprenticeship, and to make their curriculum too literary and not sufficiently technical."

I deem it proper to call your attention, in this connection, to the following action of the United States Senate in March last:

Resolved, That the Secretary of the Interior is directed to furnish to the Senate such information as is in the possession of the Bureau of Education in relation to the state of technical or industrial education in the schools and colleges endowed in whole or in part by the government of the United States,

and also in other schools and colleges in the several states and territories and the District of Columbia, and the extent to which provision has been made for the education of females in technical and industrial branches of education and the number of females in attendance at said schools.

To the official demand made upon me for information concerning this college I returned such answers as the facts warranted, and I regret that they could not show the technical and industrial side of the college in a more creditable condition.

The Faculty have unanimously instructed me, therefore, to recommend that the present elective system of studies be abolished and that there be substituted for it a well arranged *curriculum*, four years in length, and embracing, besides such other studies as your Board may prescribe, *English Language, History and Literature; Scientific and Practical Agriculture; Horticulture; Stock-Breeding, and Veterinary Science; Animal and Vegetable Physiology and Anatomy; Physics; Chemistry; Mineralogy and Geology; German Language and Literature; Philosophy and Political Economy; Mathematics; Land Surveying and Leveling; Civil Engineering; Mechanics; Drawing; Book-Keeping; Physical and Descriptive Geography, Elocution, Declamation and Composition; Military Tactics.*

To this *curriculum* optional courses in the Latin and Spanish languages should be added—the demand which already exists for them being quite large, and they are too important to be omitted. But it is recommended that Greek and French be no longer taught. Should Greek be discontinued, it is respectfully suggested that the present course in Philosophy, including Logic, Mental and Moral Philosophy, and Political Economy, be given to the Professor of Ancient Languages, and that his department in future be designated the chair of Latin and Philosophy.

The course of instruction recommended, while it makes prominent the scientific and technical features, affords at the same time ample facilities for literary culture, and, indeed, requires a large amount of it as an essential for graduation.

The Industrial Duties.

The success and usefulness of this institution as a school of Applied Science will very largely depend upon the tact and ability with which the practical duties in the technical departments are

arranged and enforced. There should be no misconception as to the object, nature, and intent of these duties. They should occupy to the theoretical courses of Agriculture, Horticulture and Mechanics relations analogous to those sustained by the laboratories, field-work and draughting, and dissecting room to the courses in Physics and Chemistry, Engineering, and Anatomy respectively—and without these practical supplements no course can be made valuable. The nature and extent of the labor to be performed must be left necessarily, under some general restrictions imposed by the Board, to the discretion and experience of the Professors of Agriculture and Mechanics, who are to be directly responsible for the success of their departments. The field and shop duties will not come every day, but will take their regular place in the round of practical work which includes also laboratory practice in Physics and Chemistry, field-work in Surveying and Leveling, Draughting and Designing, military drills, Animal and Vegetable Physiology and Anatomy, and Veterinary Clinics. They will not be intended to give mechanical skill in field operations to the student, but to make him an intelligent applyer of the laws and principles of nature on the knowledge of which scientific agriculture and horticulture are based.

To the question: Shall these duties be voluntary or compulsory? my humble judgment deliberately and unhesitatingly replies that they should be compulsory. First, *on social grounds*; as all students under the proposed curriculum will be required to study the science of agriculture and mechanics, so they should also be required to make the necessary practical applications with their professors in the fields and the shops, otherwise there will inevitably arise in the college a species of caste fatal to that homogeneity of feeling which should bind all its members into a close fellowship, and which, in my judgment, will soon destroy the efficiency and influence of the technical departments, however lavishly money may be spent in their equipment. Second, *on the ground of utility*: The courses if taught at all, ought to be made of some value to the student and to the state. The student of agriculture should be made as familiar as possible, not with books only, but with the actual soils, manures, crops, and implements themselves, and should see and participate in, as far as practicable, the best

methods of culture and preparation. The student of horticulture must learn how to plant, cultivate, prune, bud, and graft fruit-trees and vines, not in the lecture room, but in the college orchard and vineyard, under the professor's practical instruction. And the student of mechanics should see, handle, and use the tools and machinery, which are necessary for the applications of the principles of mechanism and construction studied in the text.

As I said in my report of March last: All work will be carefully performed under the guidance of the instructors, who will systematically enforce attention to principles as well as practice, and thus make the exercises a mental discipline no less than a training for eyes, hand and muscles. *But no attempt should be made to convert this into a manual labor school,* in the popular acceptation of the term, in which the student is to be turned into a veritable field hand or mechanic, and his work received as a full compensation for board and tuition; no college can do this and make its academic course of any value. The practical work should be regarded solely as a part of the regular instruction, which, in after life, may be valuable to the student, whatever his profession.

In other words, just as the professor of Chemistry *compels* his class to go with him through the practical and experimental part of the course in his laboratory, so the the professor of Agriculture ought to be allowed to require *his* class to go with him through the practical and experimental parts of *his* course in *his* laboratories, the farm and orchard. This labor, being simply instructive and for the student's benefit, should, of course, be without remuneration.

The Farm Superintendent, with his hired hands, should be responsible for the proper cultivation of the farm, but students who have sufficient skill to render their labor remunerative, and who desire to work at extra times to help pay their expenses should be permitted to do so, and should be paid therefor under some regulation of the Board. A number of such applications were received during the past session, which under our present system had to be refused. There is no reason why student labor should not be so used in developing the internal resources of the college—the farm, the stock, the gardens, the orchard, the shops—

that eventually the liberal education provided here, can be secured by any young man in our State, at a cost of not over one hundred dollars per annum, if he be able and willing to use his hands as well as his head for his own benefit. That the cheapening of higher education can be thus accomplished, the successful experience of our older and better agricultural colleges has put beyond doubt. But it will require the strictest economy and the most thorough business management in the administration of affairs in all departments.

The Farm.

The college domain consists of 2416 acres, about equally divided into woodlands and rolling prairie. I have recently had the chief boundary lines rerun, and a map of the tract made, which shows that the present fence is at no point on the line, that the north boundary runs through fields now enclosed and cultivated by Messrs. Boyd and Martin, and that a tract of 102 acres, deeded to the State, is in the possession of Mr. Peter Winters, who holds it under a deed from J. S. Fowlkes, Esq. These matters need the immediate attention of the Board.

That portion of the tract which lies east of the railway contains about seven hundred and forty acres, and should be enclosed for the proper and economical development of the agricultural, horticultural and stock departments, so that it may not only become useful as a means of instruction, but valuable to the college as a source of revenue.

Regarding the farm as a State Experiment Station, the leading object in its management must undoubtedly be to supply professors and students with a practical working laboratory on a large scale for testing and introducing new varieties of seeds, plants, trees, improved farm machinery, and new methods of culture; and to investigate all questions immediately concerning our industrial interests, the breeding, feeding, and diseases of domestic animals; the relations of soils, fertilizers, climate to special crops; fruit and forest tree culture; and the advancement of all departments of economic and scientific husbandry—investigations which frequently involve too tedious, expensive, and delicate a series of experiments to be attempted by a single private person. And

in accomplishing this object, it at the same time ought to show in full detail the proper cultivation of the great staples of our State.

The stock interests of Texas are too important not to receive attention here. If the enclosure recommended be made, 300 or 400 acres can be used as a pasture, and the breeding and management of fine stock be at once begun; in connection with which a thorough course of instruction will be given in the diseases of animals, and the scientific principles on which stock improvement is based.

The mess-hall supplies a home market for nearly everything a large farm can produce. Our gardens have furnished all needed vegetables for the school this spring, and with reasonable attention the pastures and stock-pens of the farm, when once established, would afford almost all the milk, lard, pork, mutton and beef, which the institution could consume.

The present location of the farm buildings is highly objectionable, and injurious to the interests of both farm and school. Their removal to a more suitable position is urged; and it would be well to require the Farm Superintendent to board the farm hands.

State Appropriation.

There was received last year from the State the sum of $7500.00, which the Board ordered to be expended as follows:

For Chemical Laboratory,	$2500.00
For Philosophical, Engineering, and Surgeon's Dept's...	2450.00
For Library,	1550.00
For Farm,	1000.00
	$7500.00

Disbursed:

For Chemical Laboratory,	$2300.14	
For Philosophical, E., and S. Dept's.,	2325.47	
For Library,	1544.08	
For Farm,	986.56	
		7156.25
Unexpended balance on deposit with H. C. Edrington, June 30, 1880.		$ 343.75

The itemized receipted bills for all the expenditures are herewith submitted for the examination of the Board.

The remaining $7500 00 of the original State appropriation is now due, and in regard to its disposition, I renew the suggestion made in my previous report to your excellency, which gives an outline of a proposed course of instruction in the mechanic arts, with

estimates for series of shops in wood and metal-working, including tools, machinery, engine, &c. This will cost about $4000, money which will be well invested in thoroughly equipping what can soon be made one of the most valuable and attractive departments of the College. For the Agricultural department not less than $2000 00 will be needed, to give it that extension necessary to make it serviceable as a means of instruction, and at the same time a source of revenue. There would be left, then, $1500 00, every dollar of which is sadly needed now to furnish a Drawing Academy with models, plates, casts &c., to supply a set of mathematical models,and to increase the library which is very deficient in works on Mathematics, Mechanics, Engineering, and Modern Languages. These amounts, so expended, will complete the equipment, handsomely begun last year, of all the departments, and will enable the College to meet for many years to come the demands of our State for liberal higher education, and to supply to students rare facilities for experimental and practical work in the leading industrial pursuits and the sciences on which they depend.

Military Instruction.

In obedience to the requirements of the Congressional act the organization and discipline of the College is military, but a very exaggerated idea of the time spent here in military instruction prevails. The truth is, that instruction is limited to drills which are required only about one-half the session, occur after the day's scholastic duties are over, and consume an average of not more than three-quarters of an hour a day—time which in other colleges is given to idleness or recreation. The military system of school government is admirably suited to control and discipline young men with its manly and wholesome restraints and duties, and to supply—aside from its technical instruction—that training whose constant tendency is to develop in the student a high sense of personal honor and moral responsibility, and to give him those habits of regularity, promptness, self-reliance, and respect for proper authority, which go far to make the good citizen and the successful man of business. It thus becomes a potent factor in the formation of true character; and in its minute regulations for the government of students in quarters is particularly valuable for

the preservation of proper order, police, and attention to studies. The discipline has been excellent, and the instruction in military branches as full and efficient as a College of this character could desire; and the present proficiency of the battalion of students in military drills and duties is highly creditable to the Commandant, Capt. George T. Olmsted, Jr., *U. S. Army*, detailed in charge of this department.

I respectfully recommend that in future only *one* uniform be prescribed for students, viz: The present undress uniform, slightly modified in cut, which is neat and serviceable. The dress-suit and dress-hat are an unnecessary expense, which now bears heavily on some students.

Nor should two suits be required at once, as one is worn out it can be replaced by another; and in view of the practical agricultural and mechanical duties to be performed next year, I would also suggest, as a matter of economy, that students be permitted to wear their ordinary citizen's clothing while performing them.

ACADEMIC DEPARTMENT.

The work in this department since the reorganization in Nov. last, has been done by the following

FACULTY.

John G. James, Professor of Mental and Moral Philosophy.
James R. Cole, A. M., Prof. English Language and Literature.
Charles P. Estill, A. M., Professor Ancient Languages.
H. H. Dinwiddie, Professor Physics and Chemistry.
M. E. B. G. Gartner, Professor Modern Languages.
G. T. Olmsted, Jr., *U. S. A.*, Professor Military Science.
L. L. McInnis, A. M., Acting Professor Mathematics.
John W. Clark, Assistant Prof. Mathematics and Languages.

The Chairs of Agriculture, Applied Mathematics, and Mathematics having been left vacant, I assigned Adjunct Professor McInnis to the chair of Mathematics, and to Professor Dinwiddie were given the classes in Agriculture and Applied Mathematics. In their hands these departments have had all needed care, and the classes have been faithfully taught and successfully advanced—except the class in Agriculture which was broken up last fall by the withdrawal of students.

Finding that the interests of the College demanded another

instructor, I used the authority vested in me and appointed in December last, Mr. John W. Clark Assistant Professor, at a salary of seventy dollars per month. He was assigned classes in English, Latin, Mathematics, and Surveying, and also acted as Assistant Commandant in the Military Department. The interest, zeal, and capacity which he has uniformly displayed in the discharge of all his duties has given me the highest satisfaction.

The chairs now vacant:

1. Mechanics, Engineering, and Drawing;
2. Agriculture;
3. Mathematics;

imperatively demand the action of the Board at this meeting, and should be filled promptly from the large number of able applicants whose papers are now before you; the earlier the better, so that the professors elect of Agriculture and Mechanics may have the summer months to spend in visiting the various technical schools of the North and East, for the benefit of those departments here. The present Farm Superintendent, Mr. E. Kellner, should be added to the teaching force by being required to assist the Professor of Agriculture in giving classes practical instruction in that branch and in Horticulture, for which duty he is well qualified by his long experience.

The very important chair of Biology and Veterinary Science should be established, and could be well provided for by assigning the College Surgeon, Dr. D. Port Smythe, to it, and thus putting him on the same footing with the other Professors. He would be required to discharge, as a part of his duties, the service now required of him as Surgeon; and being quartered on the grounds, instead of five miles distant as heretofore, he could much more satisfactorily and conveniently render his medical services.

These additions to our faculty, and the reduction in the number of classes by the adoption of a *curriculum* in place of the present scheme of elective studies, will render it easy to give thorough instruction to at least 150 students.

The fourth annual session closed June 23, 1880, with one hundred and forty-three matriculates, distributed as follows:

School of Mathematics,.....138
School of English Language and Literature,.....132

School of Ancient Languages,	94
School of Modern Languages,	49
School of Agriculture and Chemistry,	14
School of Moral Philosophy,	11
School of Applied Mathematics,	8

The position assigned this College by constitutional provision is at the head of the educational system of the State, and generous legislative appropriations have been made to qualify it for properly filling that position. It must therefore cease to come into competition, as it has done in the past, with our preparatory schools, and by occupying its own distinctive higher educational plane make them its feeders rather than competitors, and thus stimulate and elevate them to higher and better preparation of pupils. To do this an entrance examination should be prescribed and no one should be admitted to the Freshman class who could not prove to the Faculty his proficiency in Reading, Writing, Spelling, English Grammar, Arithmetic and Geography. For advanced classes higher examinations should be rigidly required.

Financial Condition.

The following unsettled accounts, with accompanying papers, are filed for the action of the Board:

O. H. P. Minturn,	$400.00
Baker & McKenney,	304.00
Plant Seed Company,	31.95

As they are claims which originated several years ago under the old administration, I declined to pay them or to take the responsibility of putting them on the College books as liabilities. They are, so far as my knowledge goes, the only unadjusted claims now in existence against the College.

I submit a statement of the financial condition of the College July 1, 1880, made up from the carefully prepared report of the Treasurer and the inventories of supplies on hand:

Liabilities:

Cash overcheck at H. C. Edrington's,	$4761.01
Due to Cadets,	117.71
Due Library Appropriation,	7.70
Due Employees in full to July 1st, 1880,	387.86
Due for Supplies in full to July 1st, 1880,	750.31
	$6024.59

Assets.

Due by Cadets,	$919.61
Due by T. S. Gathright, on Book Store acct.	358.95
Due by Professors,	380.89

Book Store Supplies on hand per inventory,.....	907.26	
Mess-hall Supplies on hand per inventory.....	82.55	
Oil and Wood Supplies on hand per inventory,.....	157.00	
		$2806.26
Excess of Liabilities over Assets, July 1st, 1880,.....		$3218.33

The Treasurer's report gives an accurate statement of the business for the entire session of 1879-80, which shows, notwithstanding the reduced number of students, a net deficit for the session of only $57 94, and this, too, including a large amount paid by my predecessor during the summer and fall for repairs and improvements, which was improperly charged to Expense Account.

Appended will be found an itemized account of all warrants drawn by the President of the College from June 23d, 1879, to July 1st, 1880, amounting to $24,866.30, of which $12,023.61, was drawn by President Gathright up to his withdrawal November 24, 1879, and the balance, including November pay-rolls, mess-hall accounts and other bills due December 1st, by me. Receipts for the same are herewith presented for examination. The books will show that of the debt now due by the College $625.48, was paid by me on your order to retiring professors for improvements, and $124.22 was incurred by me for enclosing the back yards of the College and Mess-hall, and that the ballance represents last year's bill and improvements never put upon the books until paid out of this year's first term's deposits, and interest.

If the College be managed on prudent business principles this indebtedness can easily be paid in two years from the current revenue of the College, with, say, 140 students, provided the suggestion of a wise economy be followed and the number of persons being paid out of the Contingent Fund be reduced. The persons so paid at present are a Surgeon, Architect, Treasurer, Store-keeper, Hospital Steward, Musician, two Janitors, and two Farm hands. Next session the farm and garden products will more than pay farm hands; and the offices of Architect, Treasurer, and Store-keeper might well be dispensed with.

MISCELLANEOUS.

A separate building should be provided as a hospital or sick-home for such students as may need medical attention, as the present accommodations for the sick are in the main college build-

ings, and are on many accounts unsuitable. A portion of the wooden barracks, now vacant, could be moved and remodeled, to the great advantage of the College.

A pavement from the College to the Mess-hall is badly needed, as in wet weather both buildings are injured and rendered unsightly by the mud carried in on the feet of students, marching to and from meals. The tiles made at Kosse would make a cheap and durable pavement, and I ask authority to have one constructed.

I submit herewith the application of Mr. E. B. Pugh, for an extension of his lease of the five acres on which his store is situated, with my approval.

The mess-hall department has been most admirably and economically administered by Mr. B. Sbisa, the Steward, whose valuable services should be retained next session. Special attention is called to the recommendations in his report; the oven and dining hall imperatively demand repairs and renovating before next session opens.

In conclusion permit me to say that the Faculty fully appreciate the desire and intention of your Excellency and your Honorable Board to carry out the intent of the law to make this distinctively an institution for the liberal and practical education of the industrial classes, and at a cost which will place its great advantages within the reach of the main body of our population. The curriculum submitted to you has been framed accordingly; and whatever course of duties and studies you may prescribe, I can assure you that they will labor faithfully and zealously to render it efficient and successful. With highest respect, I remain, Sir,

Your obedient servant,

JNO. G. JAMES,

President.

REPORT OF COMMITTEE ON FINANCE.

[*Extract from Minutes of Board of Directors, Aug.* 2, 1880.]

The Committee on Finance presented the following report:

We find, after a careful examination into all the liabilities and assets of the College, that there will be a deficiency of about, but not in excess of, $5,000. This deficiency began in 1877, and is caused for the most part by the erection in that year of two new dormitories of 24 rooms each, capable of accommodating 144 students, at a cost of about $7,000, the furnishing the same with stoves, iron bedsteads, mattresses, tables, wardrobes, chairs &c., the building of four new cisterns, of 700 barrels capacity each; the construction of stairways for fire-escapes, the making of large additions to the cooking department, table ware, &c., and the erection of bath-houses and making many other improvements, rendered necessary by the large number of students in attendance that year—there being 331 matriculates. In 1878 all the buildings on the College grounds, underwent complete repairs, at a cost of not less than $1000. When the change in the Faculty was made, in November, 1979, it was found that all the professors of the outgoing faculty, for the purpose of making themselves comfortable, had erected useful and permanent improvements, such as outbuildings, fencing, &c., amounting to $710 55. As these improvements could not be removed, it was thought but just to pay for them, and the Board accordingly so decided.

There was no Legislative appropriation to meet these demands, and not only was the Contingent Fund compelled to bear this entire burden, but in addition thereto all breakages, blacksmith and carpenter's bills, the furnishing of buckets, basins, looking-glasses, bedding, chairs, furniture, postage, printing, blanks, catalogues, stationery, advertising, supplying table ware, keeping up the farm, came out of said Fund.

When the College books were examined by the present Board of Directors, at its first meeting in June, 1879, there appeared

from the books to be a small balance in favor of the College. The Board, not being informed to the contrary, supposed that the books exhibited all the liabilities of the College, when, in fact, as they afterwards ascertained, many of the claims constituting the deficiency above mentioned had never been presented, or entered on the books.

The Board immediately directed that the books be kept thereafter in such manner as to exhibit plainly the true financial condition of the College, and they are now, and will be hereafter, so kept. They are satisfied that the deficiency above-mentioned embraces every claim against the College, and that there is nothing kept back. Had the College been patronized in 1879-80, as it was expected it would be, the deficiency would have been promptly extinguished; and if it meets with just encouragement at its coming session, the deficiency will be nearly, if not completely, wiped out in the course of twelve months. There has been no criminal or extravagant waste, the improvements referred to as causing the deficiency being of far greater value than $5,000, and are on the grounds to speak for themselves.

It may be proper to say, that this deficiency for improvements, &c., arose before Col. James took charge of the Institution, and is not properly chargeable against his administration.

We have patiently gone over the books, examining each item with its corresponding voucher, and find everything correct.

We have likewise examined the vouchers and statement of account for expenditures of the State appropriation, presented by President James, and find the same correct.

(Signed)

GEORGE PFEUFFER.
J. K. DIXON.
A. J. PEELER.

It was then resolved that in the future it shall be the duty of the junior member of the Faculty to keep the books and accounts of the College, under the direction of the President.

ANNUAL ORATION.

BY HON. W. W. LANG, OF MARLIN,

Wednesday, June 23rd, 1880.

The great question now occupying the minds of those interested in the welfare of civilized man as a member of society is to devise some definite and practical plan by which there may be comprehended, in the short period of time allowed for his education, such a course of mental and manual training as will place him at the greatest possible advantage in the very beginning of his contest with the serious and practical duties of life. England discusses the welfare of her tenant-farmers. Even the deplorable condition of her Irish subjects, so long unheeded, is now an important object of her care. Russia earnestly considers the condition of her recently emancipated serfs. France is interested in the prosperity of an industrious, frugal body of small land holders and cultivators. The American goes further and inquires: How can the farmer and mechanic be best fitted to discharge his duty to the state as a voter and tax payer? How shall he, by the speediest and surest plan, be endowed with the mental power to conceive and determine what he should do, and how it should be done, and with a trained hand to work out practically his own conceptions? And this is the American problem of to-day, whose practical solution, I venture to say, will work out more real prosperity and happiness to the people of Texas, than would the production of an infinite number of dazzling, intellectual dreamers, with neither the capacity nor the will to do the world's work.

To the earnest thinker in this direction, there can be no doubt but that its solution will be attained soonest by a system of education, such as will be found in the general aims of this college, in whose curriculum it is not proposed to ignore nor to restrict the practical cultivation and development of the intellect or brain, but to add to that beautiful creation, the divine essence of life as manifested in the active, living and accomplishing power of a trained and skilled hand. In this consists its claim upon the affections of our people beyond those of other educational institutions, which we all admit are bright ornaments to our land, but whose well disciplined files have with singular unanimity turned from manual labor as unfit to engage the attention of an educated man, and as a consequence, in our own state we see the professions crowded to an unhealthy degree, and agriculture and the mechanic arts languishing to a corresponding extent.

The Agricultural College may not send a class of practical farmers into the community and upon the land each year, but it will educate some keen and capable and observing youth, who will enter the field of farming and so

cultivate it, that the community will learn to have confidence in his work, and will discover many a useful rule written down in his well tilled and well managed acres.

In carrying out the aims of this college, there can arise no antagonism to other educational institutions of this state; no rivalry with them except generous competition to do good. The object of both is the education of the children of the state—their paths somewhat different—their destination the same—the public good. She proposes to couple together the two great forces with which God has endowed his children—the muscle and intellect—and to unite mental culture and manual labor—to infuse the spirit and soul of a directing intelligence into the minds of those who hold in their hands the most important of all industries. But as it is impossible that all kinds of manual labor can be efficiently performed by one man, any more than the whole field of human knowledge can be explored by him, it is therefore necessary that the knowledge which her needs most demand shall be taught to the youth of Texas. The interests of our state are almost exclusivele agricultural. The tastes and habits of her people, her climate, her bountiful soil, the world's need of her crops, all show that the bed rock of her prosperity lies in scientific and successful agriculture. And the very existency of this college, whose honorable career of years is known and recognized throughout our state, indicates the desire of our farmers for investigation and education in all the important branches of agriculture.

As the necessities and demands of our society increase, as our vast unoccupied territory draws to its fertile bosom the practical farmers of the older states, it will be found that our very system of government requires that the true American system of education be carried into this occupation as well as all others, and I confidently predict that each returning year will justify, and, in my judgment, demand the generous support of this and similar institutions by the Legislature and the public. If it be true then, that the body of our people are to live by tilling the soil and their occupation is to be taken up and followed by their children, the reason why scientific and practical agriculture, including in this term horticulture and stock raising, should be taught together with general literature, is manifest. We thus accomplish what, in my judgment, is the grandest achievement of human government, we fit the great body of our people in their entrance upon the threshold of the business of their lives aided by a scientific training that is tantamount to actual experience to grapple successfully with its most difficult problems. No part of the short period of life is frittered away in a vain indecision as to what calling, feeling fitted for none, the young man shall pursue. He at once selects his profession and loses none of the valuable spring time of life, devoting season after season to trying experiments suggested by some restless theorist, or by some ambitious teacher, who thinks all change is progress, and that no law can be learned by patience. He is aware that a well devised, definite, prosperous plan is of the highest importance to him who proposes to live by tilling the soil. The training he has received in the Agricultural College is a light shining ahead and undiverted from its practical teachings by promises, and unconfused by theories, never captivated nor misled by the idea that there is a short and easy road to successful farming, any more than there is to great learning, he finally attains the prosperity we all desire.

AMOUNT OF EDUCATION FOR AGRICULTURE.

There is no calling followed by man that requires a larger fund of infor-

mation, a clearer and better trained judgment, greater versatility in capacity, a larger abundance of mental resources, greater familiarity with the operations of the laws of nature, than agriculture. All other callings nearly are capable of subdivision, so that their followers may become specialists in some parts or branches. In agriculture as practiced in the United States, there is but little room for such division of labor and knowledge. On each farm, all the knowledge and labor needed on all farms, are required. The growing of hay, the cereals, cotton, the various garden vegetables and the fruits of the orchard and vineyard, the breeding and rearing of horses, mules, cattle and sheep, and domestic fowls, the fattening such as are desired for for food; provision against wind, rain, storms and drouth; the proper preparation, seeding and cultivation of the various kinds of soil; the protection of the crops against insects; the making and application of manures; the erection of fences, outhouses and dwellings; the caring for and growth, and the preservation of valuable kinds of timbers; the ventilation and disinfection of all buildings; the care for the vigor and health of all kinds of live stock, and the proper remedies for those that are diseased, and the prevention of the spread of infection among them; the making of gates, bridges, ax and hoe handles, stocking of plows and harrows, drainage and landscape gardening; all are the business of the farmer and should be understood by him.

To do this work intelligently and well, besides the manual labor necessary to give skill, involves a knowledge of chemistry, physics, mechanics, civil engineering, zoology, entomology, botany, metallurgy and geology. I do not mean that the agriculturist should thoroughly understand all that is embraced in those branches of human knowledge, but I do mean that a knowledge of the general and elementary principles of each is if not essential, at least highly advantageous; and that the continued study of them, in connection with the practical operations of his calling, furnish the farmer a wide and useful field for high intellectual exercise. Energy, industry and saving, though accompanied with ignorance, we all know have won from our rich and inexhaustible lands a kind of pecuniary success; but it is temporary and costly; it is a dull and monotonous muscular exertion; it impoverishes the soil, and in the end as our state becomes more thickly populated, will create a greater necessity for a more intelligent agriculture. But while in this college those studies that are utilitarian are deemed of the first importance, yet I would not be understood as maintaining that the education of those who are placed here will be restricted to a purely technical training in agriculture and mechanics. Here is offered the student, when his muscle has been strengthened and his mind stored with that solid knowledge, which teaches him to conceive and execute, even a banquet, not less splendid in its intellectual temptations than is found in the curriculi of other schools. The place filled in society by the American farmer is too important and honorable to be circumscribed by the limits of his farm. He is to deal with his fellow man as well as with the elements of nature. As a citizen of a free republic, he must understand the organization and operation of governmental and social forces. No system of education can be complete and neglect the grand teachings of history, social science and political economy. When we consider the magnitude of the agricultural industry of this country, which besides feeding fifty millions of our people, has supplied our commerce with five-sixths of its exports to foreign countries—the aggregate amount for the 11 months ending May 31, 1879, being $635.042,078, and of this agriculture furnished $535,813,179—the power that produces this mighty wealth may

not occupy any secondary place in the social fabric. The agriculturist, besides bearing the heat and burden of the noonday sun, must stand side by side with the professional man as a pillar of the church; with him fill the town offices; with him take his place in the legislature and help to make laws for the common weal; with him engage in the political meeting, with its stormy debate and free ballot, with him aspire to high office and exercise the right of beating and being beaten at the polls. The school house, the library, the lecture room, for mental culture, the church, for moral and religious elevation, demand from him an equal share of intelligent direction.

AGRICULTURE.

It has been well said that the intellectual, moral and social condition of the agricultural population of a country is a surer indication of its real civilization and of its advancement in all the arts and cultivation of life than all its churches and great public improvements. Scientific knowledge will not only render the farmer and mechanic more skillful in their respective employments, but will enable them to make improvements in the arts and physical sciences with which they are connected.

It has frequently been said that many useful inventions owe their discovery to chance, but we all know that it is from the elaborate and painstaking researches and investigation of scientific truths the American farmer in some parts of our country has already been supplied with the most ingenious, graceful and effective machinery to lighten his labor. And we may rest assured that all future improvements and new applications of these splendid inventions will be the result of physical and chemical, or technical knowledge combined with mechanical skill. Hence the mechanic and farmer, whose mind is enlightened with scientific knowledge must occupy a far better position than any other class in the chance of being instrumental in making those improvements in the arts, that have been in our country the fruitful source of great wealth and great honor. While the mere theorist is demonstrating principles and forming theories in his closet, and sometimes experimenting only on a small scale, the farmer in his field and the workman in his manufactory have daily opportunities of contemplating chemical processes and mechanical operations on an extensive scale and perceiving numberless modifications and contrivances of which the mere scientific speculator can form but a faint and inadequate conception. Having more opportunities of observation in these respects, he is consequently more likely than any other class of society to strike out a new path which may lead to some useful invention in the arts or discovery in the sciences. But if his mind is not imbued with knowledge he trudges on like a mill horse in the same beaten track, and may overlook a thousand opportunities of performing experiments, and a thousand circumstances which might suggest new improvements. There is therefore, every reason to believe that were scientific knowledge universally diffused among these classes, every department of the useful arts would proceed with rapid progress toward perfection, and new arts and inventions, hitherto unknown, be introduced upon the theatre of the world to increase the enjoyments of domestic society and to embellish the face of nature. No possible limit can be assigned to the resources of science, to the improvements in machinery, to the aids to be derived from chemical resources, and to the skill and industry of agriculturists and mechanics when guided by the light which scientific investigations have diffused

around them. It is by seizing on the powers of nature and employing them in subserviency to his designs that man has been enabled to perform operations, which the whole united force of mere animal strength could never have accomplished. Steam, oxygen, hydrogen, electricity and other natural agents, formerly unknown or unnoticed, have been called into action by the genius of scientific knowledge, and have generated forces, effected decompositions, diffused the most brilliant illuminations, and produced a celerity of motion both on sea and land, which have astonished even the philosophical world, and which former generations would have been disposed to ascribe to the agencies of supernatural powers. And who shall dare set bounds to the range of scientific discovery? Or to say, that principles and powers, still more wonderful and energetic, shall not be discovered in the system of nature calculated to perform achievements still more striking and magnificent? Future Fultons, Morses, Edisons, will doubtless arise with minds still more brilliantly illuminated with the lights of science, and the splendid inventions of the present age be far surpassed in the future "miracles of mechanic power," which will distinguish the days that are yet to come. But to attain this wished for consummation, it is indispensably requisite that the mass of mankind be aroused from their slumbers, that knowledge be universally diffused, and that the light of science shed its influence upon men of every nation, of every profession, of every rank.

CITIZEN PROPRIETORSHIP, OR EVERY MAN THE OWNER OF HIS OWN LAND.

The unusual and extraordinary prosperity which agriculture has shown during the last few years is undoubtedly owing to many causes, both natural and artificial; the natural causes being the diversity of our soil and climate, the variety of our crops and the economy with which new and fertile lands may be cultivated; the artificial causes being chiefly the relations established between the farmer and the soil he cultivates by the independent ownership of the land.

The strength and stimulus which comes through the ownership of the land to him who occupies it, has fixed his home upon it, and looks to it for his means of subsistence, while it has fastened in him a strong love of individual independence, has beyond question been the chief germinating source of our unequaled social and civil rights, and gone far towards the maintenance of free republican government in this land. No landed monopolies, no entails, no primogenitures, no feudal tenures could ever find room for existence under the institutions of this country. But the commercial tenure, which gives to every energetic, industrious citizen the opportunity to establish, as it were, his own little kingdom and to dispose of or exchange it at his pleasure, has superseded these effete services of a barbaric age, and created among all classes of our people a strong desire to secure small tracts of land. Hence we feel safe in the assertion that whatever increases, develops, encourages, embellishes this truly American system of land holding, becomes an important factor in securing to that people, whose form of government is republican, a multitude of civil rights and privileges. In a community based upon this system there will be found a general diffusion of wealth, the demands of the state upon its members will be large, and from its ranks will be taken men to fill offices both of church and state. To sustain such a community the adornments of home must be provided for, the children must be well clad, supplied with good books and given a good

education. To render the system attractive there must be a general diffusion of knowledge among its members. The lawyer, clergyman, physician and merchant will not then constitute an independent class, but will all own and cultivate the land which they are proud to occupy.

The presence of scientific knowledge will display itself among the people in the tasteful decoration of their houses and garden plats. The study of botany and horticulture will teach them to select the most beautiful flowers, shrubs and evergreens with which to embellish their homes. Many new comforts and conveniences will be introduced, and a new lustre appear upon the faces of general society. In many places the aspect of the country will be entirely changed; the rudely constructed house will rise into a solid and commodious dwelling. With the introduction of this knowledge we would find that we had liberalized the minds of the people, selfishness would disappear, and in its stead concord and harmony prevail. With the whole community or nation acting in unison, and every one contributing according to his ability, the most wonderful improvement in everything that regards the comfort of civil and domestic society would be accomplished. Houses on neat and commodius plans, in airy situations and furnished with every requisite accommodation, would be reared for the use of the farmer and the mechanic. Schools on practical plans for the promotion of useful knowledge would arise in every community. Humane and benevolent institutions, for the protection of the friendless poor. Manufactories to supply employment to every class of labor. Railroads and splendid highways for the convenience of the people, and transportation of produce, would be built. Cheerfulness and activity would everywhere prevail and the drone and the criminal would cease to infest society. All this and much more would be accomplished were the great body of our people thoroughly enlightened by the touchstone of utilitarian education applied to the great industries of our state.

SPECIAL TEACHING.

Having already spoken at considerable length upon the influence which a general diffusion of scientific knowledge would have upon those engaged in industrial pursuits, I will now refer to the system of special training for practical occupations; and which may be denominated the peculiar feature of this institution.

Every comparison we make between two or more objects or ideas is an act of the mind affirming a resemblance or disagreement between the objects compared; which affirmation, if deduced from a clear view of the objects presented to the mind or senses, is the declaration of a fact. If I am correct, it will follow that every person possessed of an ordinary share of understanding and whose organs of sensation are in a sound state is capable of acquiring all the leading truths of the most useful pursuits, since he enjoys the senses and faculties requisite for the observation of facts, and for comparing them with one another; and if such a person is capable of receiving into his mind truths already ascertained, he is also, for the same reason, qualified for discovering new truths or facts, provided he be placed in such circumstances as shall have a tendency to place the objects of his pursuit in the clearest point of view. That one man, therefore, excels another in these respects, is chiefly owing to his mind being more particularly directed to the contemplation of certain objects and relations, and his mental faculties concentrated upon them. Hence, when a person devoted to agricultural or

mechanical pursuits, discovers a new fact, or strikes out a new course, it is not, in a majority of instances, because he possesses powers of intellect and organs of sensation superior to the ordinary endowments of humanity, but because he was placed in different circumstances, and, by special training, had his attention particularly directed to these objects and was thus enabled to perceive relations and combinations which had been either unnoticed by others, or which were placed beyond the range of their observation. Whilst the body is active the mind does not remain dormant, but all its energies are in full and systematic operation and results are effected wonderful to the world; as the works of Sir Isaac Newton, who, when asked how he had accomplished it, declared that "he had discovered the true system of the universe by continually thinking upon it."

A vast an unexplored field in the science of agriculture still remains for the exertion of all the energies of the human mind, and in order to bring to light as speedily as possible its undiscovered truths we must endeavor to increase the number of those who shall devote themselves either wholly or in part to agricultural investigation and research. This fact may be illustrated from the history of the past progress of general science. In those ages, when only a few individuals directed their attention to such pursuits, little or no progress was made, sometimes even they appeared to have taken a retrograde course. During the dark ages, when the human mind, fettered by papal tyranny and superstition, and absorbed in sensual gratifications, seldom made excursions into the regions of science. no useful discoveries were brought, to light. Science was not only at a stand, but the knowledge of improvements of preceding ages were even in danger of being entirely obliterated. But no sooner had the human intellect burst its fetters, and the number of rational investigators began to increase—no sooner had they formed themselves into regular associations for scientific purposes, than science and art were aroused from the slumber of ages, and began to move forward toward perfection with accelerated progress.

Again, looking merely at its economic value, we are not surprised that special training in the practical industries of life is attracting the attention of all civilized nations. It is clear that the value of the common laborer to the community at large is positively increased, and his power of adding to the common stock as a producer is materially enhanced by the training which he has in the schools. The increase of wages he will receive on account of his knowledge is put at not less than 25 per cent. This increase of value arises from the fact that the laborer is more readily instructed in his work; that he needs less supervision; that he does his work to better advantage, and therefore produces more in a given time; that he is less liable to join in riots and strikes; that he is more industrious, less dissipated, and lastly, that he is less liable to become an expense to the commonwealth through poverty or crime. These are but a small portion of the rich harvest of good results to the state. With what earnest zeal, then, should every man who has at heart the true interests of Texas, urge the plea for such training of her citizens, based even upon its economic value to the state.

At this point the remarks of Dr. Lyon Playfair before the British Social Science Association are opportune. The English savant advocated the training which shall best fit a man for his place in life. After referring to certain English schools and to ancient law requiring compulsory education for certain classes, he said: "This main idea of fitting a man for his work was vigorously supported by our old reformers. John Knox held

firmly by it, especially in his scheme for secondary education, which, unfortunately for Scotland, was never adopted, though his plan for primary education was In the former he announced that no boys should leave school till they had devoted a proper time to 'that study which they intend chiefly to pursue for the profit of the commonwealth.'" This is the old conception of the object of education, and re-appears at the present day under the modern garb of "technical education." All the reformers urged its necessity, especially Luther and Melancthon. Most European states have held fast to the idea, with more or less of development, but it has vanished utterly from our English schools. Our primary schools, on the whole, do not teach higher instruction than a child eight years of age may learn. In our class of life, our children acquire such knowledge as a beginning—with the working classes they get it as an end. What an equipment for the battle of life! No armor plate of knowledge is given to our future artisan but a thin veneer that will rub off completely in three or four years' wear and tear of life Under our present system of elementary teaching, no knowledge whatever bearing on the life work of the people, reaches them by our system of state education. The air they breathe, the water they drink, the tools they use, the plants they grow, the mines they excavate, might all be made interests of surpassing importance to them during their whole lives; and yet, of them they learn not one fact, yet we are surprised at the consequences of their ignorance. A thousand men perish yearly in our coal mines, but no teacher tells the poor miner the nature of the exlposive gas which scorches him, or the after damp which chokes him. Boilers of steam engines blow up so continually that a committee of the House of Commons is now engaged in trying to diminish their alarming frequency, but the poor stokers who are scalded to death or blown to pieces were never instructed in the nature and properties of steam. In Great Britain alone more than 100,000 people perish annually, and at least five times as many sicken grievously out of pure ignorance of the laws of health, which are never imparted to them at school. They have no chance of learning them afterward, as they posseess no secondary school. The mere tools of education are put into the hands of children during their school time, without any effort being made to teach them how to use the tools for any profitable purpose whatever; so they get rusty or are thrown aside altogether. And we fancy that we have educated the people! Our pauperism, our crime, and the misery, which hovers on the brink of both, increase terribly, and our panacea for their cure is teaching the three R's. "The age of miracles has passed by, and our large faith in our little doings will not remove mountains. It is best to be frank. Our low quality of education is impoverishing this land. It is disgracefully behind the age in which we live and the civilization which we boast, and until we are convinced of that, we cannot be aroused to the exertion required for the amendment. This is no new complaint and has been long made by higher authorities than myself." Though Dr. Playfair spoke directly to an English audience and aimed therefore to illustrate English necessities, there is no one who has examined the relations of labor and capital in the United States, however superficially, who will not acknowledge applicability of his criticism to our circumstances. An eminent writer has said, "The earth is the ground floor, so to speak, of nature; the home, or rather the cradle of man and of nations—the dwelling place of our race. It is not merely a region of immense space—a vast superficies; it is the theatre where

all the forces of nature and the laws of nature are displayed in their variety and independencies. Besides this, it is the field of all human effort, and the scene of a divine revelation!" In the view that it is the great workshop of nature and the home of all natural elements and forces, may be comprehended the whole body of the material sphere, but as the home or cradle of man and the scene of human efforts the limit must be circumscribed by the boundaries of those portions that offer to the human family, by reason of natural resources, soil, climate, atmosphere, vegetable and animal life, the best opportunities for rapid and continual advancement in power, in wealth, in civilization, in a ceaseless development of his power of thought. Man by his very nature turns away from the glistening icebergs, the chilling blasts and rigorous season of a polar zone, where two-thirds of his life must be spent within the narrow limits of closely built walls, and sustained by artificial means. He does not care to dwell under the burning rays of a tropical sun, and however rich the soil or exuberant the vegetation he will not make his home where disease-engendering malaria is the burden of every breeze, where listless torpidity seizes upon all his intellectual powers. Nor will he rest upon the barren sands of a Sahara, though its sunlight be the brightest, its atmosphere the purest. None of these portions of the globe offer a home to the Caucasian. But within the confines of this great state of Texas, with its incomparable climate and soil, adapted to the production of everything demanded by the necessities of the human race, with its mountains and hills, ready to yield untold wealth to the industry of the miner, with its streams and rivers, offering him food and easy transportation to an extensive coast, with its valleys and almost boundless prairies of unsurpassed fertility and beauty, the very inspiration of health and energy—have we not all that any country can offer as a home to the human family. It is, then, for the development of such a country, and the utilization of her mineral resources, the cultivation of her fruitful soil, not the building up of her waste places—none such disfigure her fair proportions—to build up the fairest civilization that has ever adorned the earth, is the scene of labor and the life duties for which this college is preparing the young gentlemen who wait upon her instructions. There is no field on earth that offers such opportunities to accomplish the highest results of human labor. Think too of her immense extent of territory, compared with which many of the kingdoms of the old world dwindle into insignificance—175,000,000 acres of land capable of sustaining a population of over 40,000,000. Who in this age of progress shall be heard to say that the costliest nurture, the most careful scientific training shall be denied those, whose life work is to be the development of the great industries that are to build up Texas. How can a greater service be rendered to the cause of humanity and universal prosperity than by educating the farmers and mechanics of this state? But the revolution of thought that has placed this noble institution where it now stands, will not be content with this alone, it will demand and receive from this school thoroughly educated geologists and chemists, botanists to classify and tell us of the structure and functions of our vegetable life, veterinary surgeons acquainted with the physiology of our domestic animals, metallurgists and miners to develop our mineral resources, a vast number of engineers, whose work will be a control of water in its manifold uses to man, and the building up of thousands of miles of railroads, the necessities of our people will soon require—in short, a

trained worker in every branch of science. And I ask why shall not the crop of men and women raised up in Texas, like her other crops, call forth the admiration of the world by their excellence?

In view of the fact that this is the only state institution to which our people can look, and further that it is the cheapest college in the United States, it has not met with that ardent support from all classes of the community which it deserves. The land we have received from the nation as an endowment has been converted into a permanent fund, from which a handsome annual interest is being derived, and this amount supported by the, not illiberal, appropriations made at various times by our legislature, have removed many difficulties in the way of permanent success. Under the provisions of our constitution no future legislature can neglect or fail to take such action as will insure the maintenance and support of the college. It is no longer a new enterprise. Its experimental features have long since vanished, and it only remains for all good men and women, all who take a pride in the advancement and prosperity of the state, to enter into a hearty co-operation in building up the college.

A word, in conclusion, to you, young gentlemen of the college; to you, in the days that are to come, when the lessons taught here shall have helped to attain the glorious destiny that awaits this great state, when your industry and your application of what you have here learned shall have given you an honored place in the history of Texas, will come with peculiar satisfaction the reflection that you are among the first born of a mother so noble. I say an honored place in her history, for with the armament furnished you by the special training you have had here, with the almost limitless field and the grand opportunities bounded only by the lines of your future lives, there would seem that no fear could arise, that you might not achieve all those rich treasures of accomplishment that nature generously yields to human knowledge and human effort. And while your advantages have been great, the anticipations of your efforts will be of the same measure; it will not be expected of you, that like an unskilled and timid mariner, you will skim the edges and cling to the barren shores of the vast ocean of knowledge, but that you will open your eyes to the wide horizon around you, spread your sail to the propitious breeze that woos it, and, grasping your helm with the conscious hand of a master, explore its remotest limits. Take your places always in the front rank of those, who, inspired by the heroic traditions of her past, and her grand future destiny, are now battling for the material prosperity and progress of Texas, and cease not your efforts until you, her own children, shall have adorned her vast continental area with a splendid agriculture, established from border to border, lines of railroads, canals and telegraph, taken tribute from the rich deposits of her mines and mineral lands, built up her manufactories, her cities and towns, her public buildings, churches and, above all, her school houses. Provided with such men true to her institutions, men capable of directing the construction and operation of her public works and of developing her rich stores of latent material wealth, Texas will attain her proper degree of industrial prosperity, and become the admiration of the civilized world. I do not doubt, young gentlemen, but that patriotic pride no less than personal ambition will prompt you to thus make use of those applied and practical sciences which have been taught you at this college.

FIFTH

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