

DOWN THE DEEPEST DRY MINE IN UNITED STATES

A Visit to the Old Abe Gold Mine at White Oaks, New Mexico—Main Shaft Descends 1300 Feet, or Nearly One-Third of a Mile, as Straight as a Plumb Line Can Make It.

The Old Abe gold mine at White Oaks, N. M., is the deepest dry mine in the United States, if not in the world. The main shaft descends 1,300 feet, or nearly one-third of a mile as straight as a plumb line can make it, says Garner Curran in the Los Angeles Times.

I first visited the stamp-room. Here twenty immense iron rods were bobbing up and down with a deafening roar. Conversation was impossible in this building on account of the noise. Your words seemed to be thrust back down your throat, as if your weak effort to create any additional vibrations in the overcharged atmosphere were an imposition.

The young engineer in charge, Mr. Lund, however, knew exactly what to do, and showed me all the points of interest. I was a little timid about entering the building at first, as the sign, "No Admittance," and the terrific noise suggested terrible things.

Twenty stamps pound away day and night, crushing fifty tons of rock every twenty-four hours. The Old Abe mine is called a low-grade proposition—as is called the ore only runs from \$1 to \$10 of gold per ton. Occasionally good pockets or veins run as high as \$50 per ton. The entire mine is run on a practical and selected each month. The Old Abe is the only mine running in this vicinity, although the surrounding hillsides are full of prospect holes, and covered with good mining, some of which contain pretty fair milling or which contain good bullion.

With proper management, doubt many of these adjacent mines could be made to pay handsomely. The entire mountain is a great body of ore. The Old Abe is now employing about thirty-five men.

After the ore is crushed, a small stream of water washes it from under the dies and it flows in a muddy sheet over plates coated with quicksilver, which catches most of the gold. What gold escapes is caught by the cyanide process.

From the stamp mill, I was taken up the hill a little ways, and turned over to Mr. Keith. First we visited the engine room. Here is an immense hoist run by a 150-horse power engine. The one and one-half inch cable is 2,300 feet long and every foot tested to a twenty-ton capacity, so one gains confidence before the descent is made. The going rounds one, two, three, four, one, two. The immense wheels begin to revolve, slowly at first, then faster, until the piston strokes are almost as fast as one can count. Yet at every stroke of the piston the ore car is brought sixteen feet nearer the surface.

The fastest time in which a loaded car has been brought up from the 1,300 foot level and an empty car returned is five minutes. When one thinks of the distance traveled, 2,300 feet, one-half of that perpendicular, it will be seen that this is pretty fast work.

The numbers given by the going indicate the different levels where the next stop is to be made. An immense dial with a pointer which revolves like the hand on the clock, tells the engineer the exact location of the hoist at every moment. He has perfect control of the machinery, but must keep a level head, for in his hands are the lives of six comrades at all hours of the day. A misinterpretation of the signals, or a false start might prove disastrous to many men.

We next visited the bunk house, and were given a pair of groggy overalls, a jumper to match, a cap and a candle in an iron holder. I can only imagine how I looked. I do not believe the sheriff would have recognized me were a \$5,000 reward out for me.

The going sounds, the cable hums, and up shoots the car out of the seemingly bottomless pit. The loaded car is replaced by an empty one, the safety lock is unlatched, and the car starts downward. My guide has made no motion, and I begin to wonder what he shall have to make a flying leap for the car, from its stops level with the shaft house floor. The engineer knows we are to descend, and lowers the car to the next point to make it easier for us to step aboard.

We step in, take a seat on the edge of the car, the signal is given and away we go. Talk about going down the Byrne Block elevator. Just add enough stories to that building until you come as high as Echo Mountain House, and we shall have to make a flying leap for the car, from its stops level with the shaft house floor. The engineer knows we are to descend, and lowers the car to the next point to make it easier for us to step aboard.

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At first I was inclined to hang onto the railing. I could get hold of it, I could see the sides of the shaft shooting up past us, then all became dark. We began to go faster and faster.

Mr. Keith struck a match and said, "We will light our candles." The draft was not strong going down, but nearly every time we came up our candles would go out.

"The fifty-foot level," sang out Mr. Keith before we got our candles lighted. The 100-foot, 150 and 200-foot levels were quickly passed.

"From here down to 800 feet," said Mr. Keith, "no tunnels are made. From 800 to 1,200 feet we have tunnels every fifty feet."

The car takes an extra speed downward, but the hoist runs on the wooden track as smoothly as a passenger elevator. In a little over a minute the 800-foot level is reached, and from there the dark, gaping holes of the shaft flash out before us at regular intervals.

The speed of the cars slackens and it comes to a stop as neatly as if the engineer were aboard and not one-third of a mile away.

We step out on terra firma—but what a feeling! Thirteen hundred feet of rock and dirt between us and the blessed sunshine. Would Gabriel's trumpet ever be able to resurrect us, should we be buried under such a burden? Such thoughts as these passed in entering my head, but Mr. Keith starts out and I have nothing to do but to follow.

No timbers are overhead. The ledge of rock is not solid, but broken and crumbling as on the surface. One would think the pressure from above would be enough to make everything solid rock. Yet no accident has ever happened in this mine from a cave-in.

We follow the shaft 300 feet to the end of a little shaft drift. Here is a miner all alone, picking at the loose, crumbling rock. A big dynamite blast has been fired only a few minutes before and he is eagerly looking at the vein to see if it is not richer than it was before. What an exciting life it must be! Each day may open a pocket of the rich, sparkling ore, or disclose a much better or wider vein.

The blast had thrown out the broken three-foot space under the roof. It would not take much to close up that space entirely and then where would we be?

Mr. Keith took the risk and piled out a piece of the rock for me to retain as a specimen from the 300-foot level. We visited many drifts. Some were

being worked by hand, others by the latest improved compressed air drills. These drills strike a blow that seems to shake the entire mountain. The sound of the escaping air, hissing like a thousand demons, the sight of the dirt-begrimed miners working under the faint candle-light, sometimes in dark recesses fifty or more feet above or below you, suggest only by a skeleton work of timbers, makes one think that he is indeed in the bottomless pit, and that his Satanic majesty is only around the next corner with his pitchfork lying in wait.

Mr. Keith turns around and with a smile asks if you feel dizzy from the change of air. I say no—for the air is as pure as that on the surface. I think the question is only to test my nerves and to give me a chance to back out—or rather to go up—before he shows me the next sight.

We go back to the car, and are taken up to a higher level. Here we enter a drift, but proceed only a little way when I find myself walking on an eight-inch board, threading my way through one of those big chambers which is filled with a skeleton work of timbers built in squares about six feet apart. I hesitate, and ask Mr. Keith how far up the chamber extends. About eighty feet he replies. Whew! I timidly ask how far down. Oh! about 150 feet. I grab a post and gaze across the black space on either side. The walls are invisible. Everything is swallowed up in darkness, except the few timbers near us. We are suspended in mid-air in mid-earth. What a paradox! If I could have seen the bottom of that shaft, I am sure that I never could have returned to solid ground without aid.

We proceed along another drift. Here the excavations are all overhead. We hear the rattle of some loose stones as they come tumbling down, and I instinctively stop under the protection of one of the large timbers. A piece of rock as large as my head falls at my feet with a very suggestive thud. A few pebbles are caught in the rim of my hat. Mr. Keith explains that it has been some time since any work has been done in this chamber and that such occurrences are very unusual. He assured, I proceed, but am rather glad when we have finished investigations in this part of the mine.

In stopping at the various levels the engineer seldom varied an inch from the correct position. His wonderful control of the hoist was enough to give one a feeling of perfect safety.

At 3 p. m. the shift changed, and we went up with four miners. It was a squeeze to get us all on the hoist, but the engine lifts six tons as easily as six men.

At the surface I was introduced to Gen. John Hewitt, general manager of the mine. He was wearing a bit of ore from a new strike and handled the pan like an expert. From the smile on his face I knew he was well satisfied. I am sure that I was, and gave him my hearty thanks for the privilege of enjoying such a novel experience.

GOOD-BY TO "HELLO GIRL."

Automatic Telephone Exchange on Trial in Chicago.

Ernest A. Falter, an electrical and mechanical engineer of this city, has invented and successfully operated an automatic telephone exchange. Mr. Falter is a native of the Black Forest, in South Germany, and is but 31 years old. Six years ago, while installing a telephone exchange in San Francisco, he conceived the idea upon which his "mechanical operator" is built.

He secured financial backing, hid himself away, first at the viaduct plant, and later at 505 East Fayette street, in this city, and in May last an experimental machine, rudely built, was given a trial, and every hope of the inventor was realized.

Then followed the actual building of a 300-phones exchange. Equipment, sweeping patent rights were secured, and the machine is now complete. Some of the merits of the mechanical operator as compared with present day manual and so-called automatic exchanges, will be seen by the following: A multitude exchange of 1,000 circuits has 1,250 or more magnets; the present automatic exchange of the same size has 3,000 while the Falter system only requires 154, and the proportion holds through all sizes of exchanges.

A small multiple exchange of 1,000 subscribers with metallic circuits would have 10,000 talking contacts. The present automatic of the same size would have 2,000,000, while the new mechan-

ical operator would have only 3,000. The multiple exchange of 4,000 subscribers would have 160,000 contacts; the present automatic 32,000,000 which is wholly impracticable, while this new mechanical operator would have only 12,000.

The new system is flexible, with no "multiple" feature. The simplicity of circuits is fully preserved. It works as fast as the multiple system now used. No calls can be lost as the result of a rush on any section.

The apparatus is easy to operate and the necessary attachments can be placed on any equipment now in use in a short period. It has "number wheels," which expose a number through a small opening, leaving a means of check that the right number is sent for the subscriber.

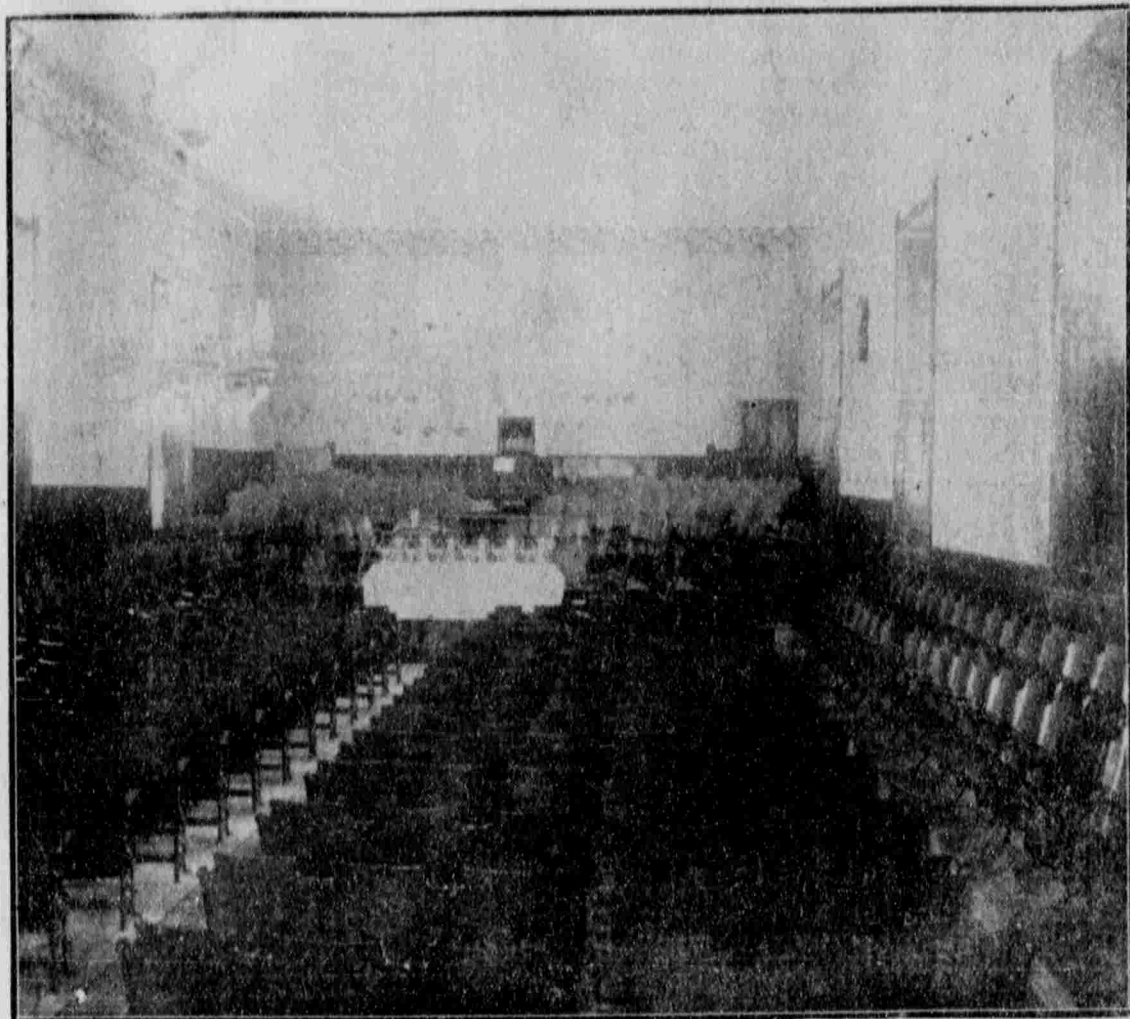
It is set by a half turn of a knob, and the subscriber does not have to stand with his ear at the receiver, but can proceed with other business until the bell announces that connection is made. From the moment the number is set to the required number and the calling knob turned until the end of the conversation the exchange operates automatically and independently of the subscriber, and it is impossible for him to interfere with it. Notice is given of the completed connection by the ringing, and, as in manual exchanges, the act of hanging up the receiver restores all parts of the circuit to normal or position of rest.

It cannot be definitely learned whether the new company is negotiating with the other companies, but it is believed that it is.—Chicago Chronicle.

EXAMPLE SATISFACTORY.

A Gay Boy, but Made Wife and Daughter Happy.

The marriage of Mrs. Fred Gebhard has caused little surprise, though society was not sure Mr. Gebhard was the bridegroom. As Miss Morris, the bride, was famous for her imprudences and her adventures, such as waiting in a fountain in ball gown and satin boots, jumping from a yacht and being rescued in dinner gown, and numerous similar pranks, made interesting reading in the columns of her young ladyhood. The announcement of her present marriage recalls the story told of the days when Mr. Gebhard was "courtin'" her, and her father, Judge Morris, who had been a grocer and a bit of a "sport" in his time. Thinking matters had gotten to a point where a "plain talk" with his daughter was his duty, he asked to see her in his library. "My daughter," he said, "is Mr. Gebhard is coming here very often. What does it mean?"



THE NEW MORGAN STAKE TABERNACLE.

The Morgan Stake Tabernacle, a handsome interior view of which is shown in the accompanying cut, was dedicated on Sunday, December 15, by President Joseph F. Smith. Among others who were present on that occasion were President Anthon H. Lund, Apostle Clawson and the authorities of the Morgan Stake.

In his report President Daniel Heiner stated that the people of Morgan Stake were in a happy and prosperous condition, and had responded generously to the call made upon them for the erection of the beautiful Stake house.

Remarks were made by President Anthon H. Lund, who congratulated the people upon possessing so fine a house in which to gather to worship. He dwelt some upon the theme of temple building, and traced the history of that work from the beginning down to the present time.

President Joseph F. Smith delivered a sermon in which he said he was well pleased with the commodious and well appointed building that had been completed and paid for. He reminded the people that it was a house of worship and not of pleasure, and everyone, from the children up, should reverence it as such. He spoke of the paying of tithes, of being honest, and keeping the Word of Wisdom, defining the latter in detail.

In the afternoon Apostle Clawson delivered an impressive sermon to a crowded house, and then the dedicatory prayer was offered by President Joseph F. Smith.

In the evening a conjoint meeting of the young people was held and addresses were made by Presidents Smith and Lund and Apostle Clawson. The following day remarks were made by Stake Counselors W. H. Rich and W. W. Francis, President Lund, Apostle Clawson and President Smith. The benediction was pronounced by Patriarch Porter, and the conference was dismissed for three months.

The people of Morgan Stake are deserving of praise for their unity and determination which has resulted in the construction of and paying for one of the finest Stake tabernacles in the Church.

Thanks and Greeting.

In closing the year 1901, the most prosperous in our history, we desire to extend to our friends throughout the intermountain region, our warmest acknowledgements for the patronage which they have so generously accorded us during 1901, to wish them all the joys of the holiday season, and to hope that THE NEW YEAR may be even more prosperous with them than the old one has been. On our part we promise that 1902 shall witness renewed endeavor to please our patrons by fair treatment and by an even more liberal display than ever before of the well-known lines carried by our house.

Respectfully

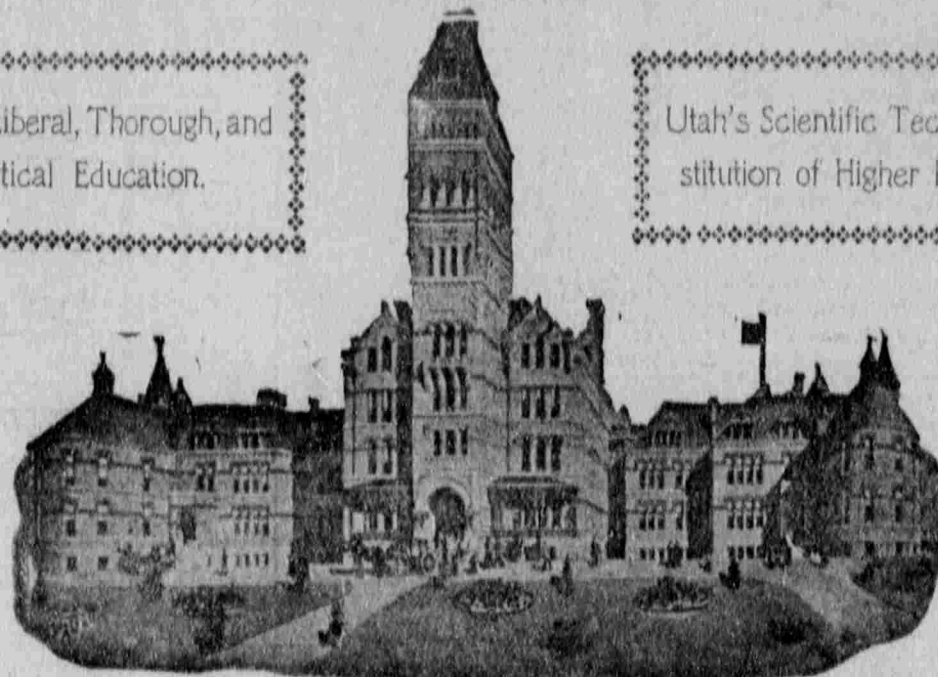
Co-op. Wagon & Machine Co.,
GEORGE T. ODELL, General Manager.

AGRICULTURAL COLLEGE OF UTAH,

LOCAN, UTAH.

Provides Liberal, Thorough, and Practical Education.

Utah's Scientific Technical Institution of Higher Learning.



The Agricultural College of Utah constitutes part of the public school system of the State. It was established in 1883 by the State Legislature, in pursuance of an act of Congress, passed July 2, 1862, granting public lands to the several States for the establishment and maintenance of institutions of higher learning. In order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life. It is the general policy of the College, in accordance with the spirit of the law under which it was organized, to provide a liberal, thorough, and practical education, meeting the demands particularly of the industrial classes. In all of the work throughout the institution, the two extremes in education, empiricism and the purely theoretical, are avoided, the practical being based upon and united with the thoroughly scientific. The practical work, on the farms, in the orchards, vineyard, gardens, dairy, commercial rooms, kitchen, laundry, sewing rooms, different scientific laboratories, and the carpenter, forge, and machine shops, is done in strict accordance with scientific principles. In addition to the practical work of the different courses, students are thoroughly trained in the related subjects of science, and in mathematics, history, English, and modern languages. While the importance of practical training is emphasized in all of the courses, the disciplinary value of education is kept constantly in view. It is recognized that the mind and eye and hand must together be trained in order to secure symmetrical development. The object is to inculcate habits of industry and thrift, of accuracy and reliability; and to foster all that makes for right living and good citizenship.

COURSES.—Regular college courses are offered in agriculture, domestic science, commerce, civil engineering, mechanical engineering, and general science, each extending through four years and leading to a degree. For the accommodation of students who are not prepared to enter the regular college courses, and who can remain in the institution but a few years, elementary, or high school, courses are offered in agriculture, domestic science, and commerce, each extending through three years and leading to a certificate of graduation. In addition to these courses there is a manual training course in domestic arts, three years; a manual training course in mechanic arts, four years; an engineering preparatory course, two years; and a preparatory course, one year; also special winter courses in agriculture, domestic arts, and mechanic arts.

In addition to the work of the preparatory department, the College offers: Thirty courses in agriculture, including irrigation, farm drainage, buildings and fences, farm machinery, soils and farm crops, soil physics, history of agriculture, farm management, poultry management, stock raising, stock judging, breeds and breeding, stock feeding, dairying, poultry management, poultry experiments, general horticulture and economic entomology, propagation and care of plants, pomology and orchard management, landscape gardening and forestry, vegetable gardening, floriculture, and veterinary science; twenty-one courses in domestic science and art, including laundering, different kinds of cooking, fruit work, foods, sanitation and hygiene, home nursing, dietetics, household economics, hand and machine sewing, designing, cutting, fitting, dressmaking, and fancy work; fourteen courses in commerce, including bookkeeping, stenography, typewriting, commercial calculations, commercial law, business customs, history of commerce, constitutional and international law, transportation, banking, and finance; ten courses in civil engineering, including surveying, roads and pavements, hydraulics, irrigation, water power, and masonry structures; eight courses in mechanical engineering, including analytical and applied mechanics, steam engineering, machine design, power, and dynamo machinery; fifteen courses in mechanic arts, including general carpentry, home industries, cabinet work, forging and machine work; ten courses in natural history, including anatomy and physiology, zoology, general biology, histology, and bacteriology; two courses in botany; six courses in chemistry, including general, organic, and agricultural chemistry, chemistry of foods and cookery and quantitative analysis; five courses in geology and mineralogy, including assaying; four courses in physics; eleven courses in mathematics and astronomy, including algebra, geometry, trigonometry, analytical geometry, calculus, descriptive geometry, differential equations, modern geometry, advanced analytical geometry and calculus, history of mathematics, and general and practical astronomy; 8 courses in English, including English classics, rhetoric, literature, literary masterpieces, nineteenth century authors, Shakespeare and the drama, and education; 9 courses in language, including German, French, Spanish, and Latin; 9 courses in history and civics, including civil government, economics, sociology, industrial history of the United States, constitutional American history, and philosophy of history; 6 courses in drawing, including freehand and mechanical drawing; besides work in meteorology, psychology, military science and tactics, and physical culture.

WINTER COURSES.—During the winter months, beginning January 1, the college offers special courses in the various subjects of agriculture, horticulture, veterinary science, dairying, sewing, household management, cooking, carpentry and blacksmithing. In addition to the work of these courses, students may take such courses in mathematics, English, history, and other subjects, as they are prepared to pursue advantageously. The sections of the different classes are so adjusted that those entering in January may take work in any of the departments of the institution for which they are prepared.

ENTRANCE.—The college grounds comprise 111 acres, of which 20 acres constitute the campus, 7 acres the athletic field, 73 acres the farms, and 11 acres the orchards, vineyards and gardens. There are altogether 17 college buildings, constructed and equipped for the various purposes of the institution. The chemical and mineralogical, the physical, the agricultural, and the biological laboratories are provided with the necessary apparatus and supplies for thorough scientific work. For the work in dairying, engineering, mechanic arts, domestic arts, cabinet work, forging and machine work, ten cent work in the laboratory, including anatomy and physiology, zoology, general biology, histology, and bacteriology; two courses in botany; six courses in chemistry, including general, organic, and agricultural chemistry, chemistry of foods and cookery and quantitative analysis; five courses in geology and mineralogy, including assaying; four courses in physics; eleven courses in mathematics and astronomy, including algebra, geometry, trigonometry, analytical geometry, calculus, descriptive geometry, differential equations, modern geometry, advanced analytical geometry and calculus, history of mathematics, and general and practical astronomy; 8 courses in English, including English classics, rhetoric, literature, literary masterpieces, nineteenth century authors, Shakespeare and the drama, and education; 9 courses in language, including German, French, Spanish, and Latin; 9 courses in history and civics, including civil government, economics, sociology, industrial history of the United States, constitutional American history, and philosophy of history; 6 courses in drawing, including freehand and mechanical drawing; besides work in meteorology, psychology, military science and tactics, and physical culture.

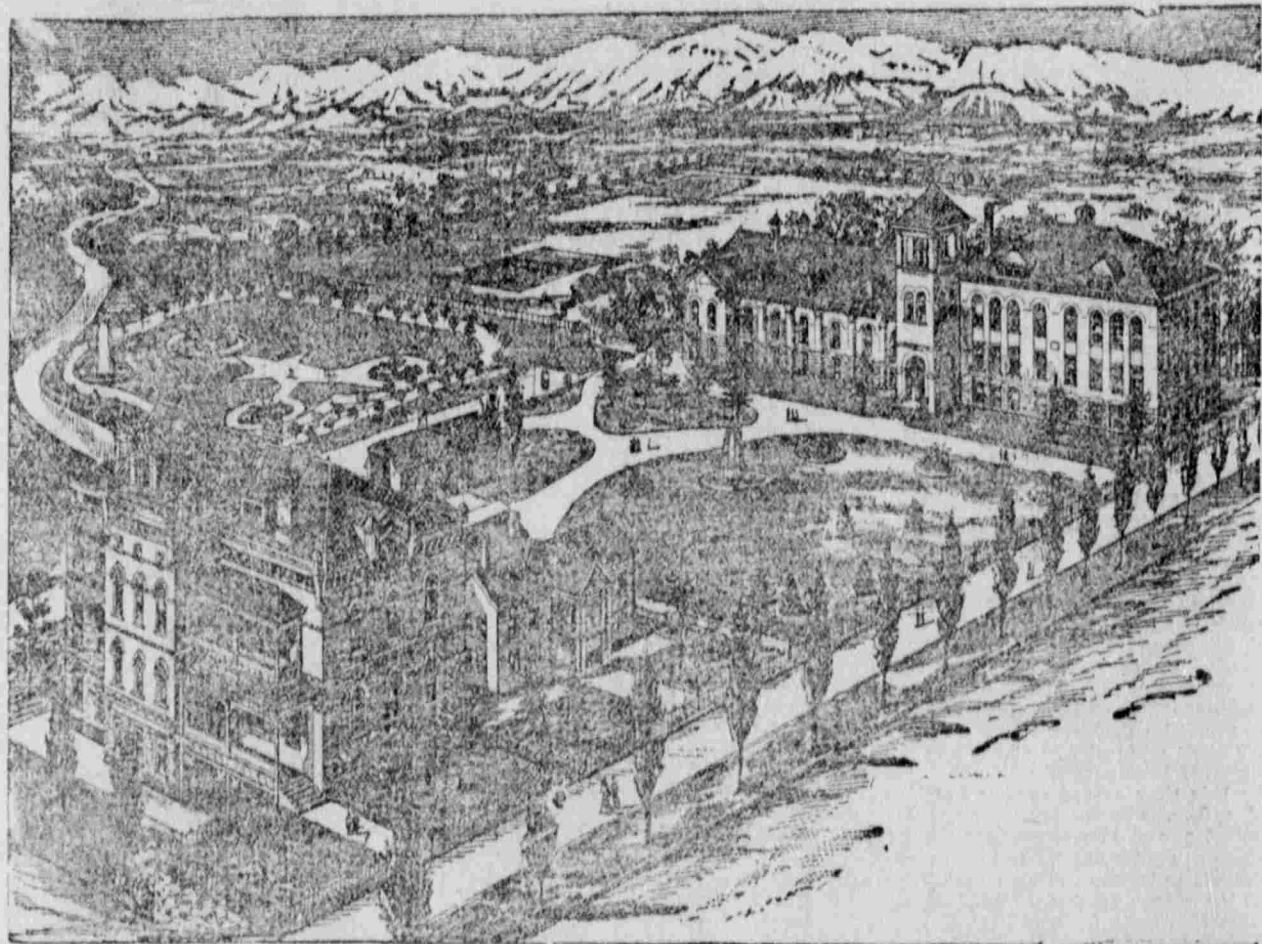
During the present year a number of important improvements have been made. The dormitory has been generally refitted and thoroughly renovated, and has been furnished with new bath rooms. Department museums have been established, and the large room on the top floor of the main building, heretofore used for the general museum, has been divided into five large well lighted class rooms for work in mathematics and language. The large room in the basement of the north wing, formerly used for shop work, have been finished and provided with the necessary equipment for the work of the department of agriculture, including a soil physics laboratory, store room, agricultural museum, and class room. The soil physics laboratory is furnished with the most modern apparatus required for the work in this department. The library contains upwards of 9,000 bound volumes and 8,000 pamphlets. There is also a large reading room, furnished with the necessary tables and slopes on which are placed 240 of the best newspapers and magazines of the United States and Europe. In cases in the reading room are also encyclopedias, dictionaries and other works of reference.

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BRIGHAM YOUNG COLLEGE,

LOCAN, UTAH.

The Latter-day Saints' Scientific and Normal School, Founded July 24, 1877, by President Brigham Young. Faculty, Thirty Members.



POLICY.

In accordance with the Deed of Trust and Articles of Incorporation, it is the policy of the institution to promote the higher educational interests of the people, providing a liberal and thorough education that embraces intellectual training and physical culture, but first of all a deep and rational religious training.

It is the constant aim of the authorities of the College to provide for such work as will prepare the students for success in life, considered from the widest point of view. The religious instructions given in the College tend to develop the highest type of manhood and womanhood—a type that cannot be obtained in colleges not of this class. Thoroughness and efficiency are emphasized in all of the departments, and each year marks an improvement in the facilities and strength of the College.

FACILITIES.

The College buildings are centrally located and are comfortable and commodious; they are supplied with steam heat, water, and electric light. The laboratories, the library, the

business rooms, and the gymnasium are so equipped with books, apparatus, etc., that they are efficient and up-to-date. The museum is supplied with specimens illustrating the subjects of geology, mineralogy, paleontology, metallurgy, botany, and zoology.

COURSES OF STUDY.

1. Courses in Arts—Given a general education. Corresponds with the usual college and university courses.
2. Academic Course—Gives a good high school education. Prepares for College.
3. Normal Course—Normal Training, Pedagogy, Psychology, English, History, Mathematics, Science, Art.
4. 5. Business and Store Business Courses—Bookkeeping, Commercial Law, Stenography, Typewriting, English, Mathematics, History, Science, Penmanship.
6. Domestic Arts Course—Plain Sewing, Dressmaking, Household Economics, English, Arithmetic, Science, Drawing, Pedagogy.
7. 8. Preparatory and Winter Courses—Prepare for high school.

8. Missionary Course—For the preparation of young men for active missionary work.

STUDENTS' EXPENSES.

Tuition is free. All students except missionaries pay an annual entrance fee of \$10, and all pay an annual library and gymnasium fee of \$1.00. A single subject the charges will be \$1.00. Under no circumstances will any of this be refunded. Alumni are admitted to do special work upon payment of such proportion of the entrance fee as the number of hours taken is to the year's requirements in the Arts Course.

TRUSTEES AND OFFICERS.

Brigham Young, President.
Joseph F. Smith, Vice President.
Wm. B. Preston, Chairman of Executive Committee.
Wm. H. Lewis, Secretary.
Joseph Howell, Treasurer.
M. W. Merrill, Secretary and Treasurer.
Lyman R. Martineau, Secretary and Treasurer.
H. Bullen, Jr., Secretary and Treasurer.
Jas. H. Linford, President of Faculty.