

WEST ENTRANCE TO THE GREAT ASPEN TUNNEL.

these betterments.

SAVED NINETEEN MILES.

duction in grades from seventy-five

feet to forty-three feet per mile, and an almost straight instead of a crooked

BONA TO BOSLER.

difficult to keep a good hold upon it.

consists of. There is great variation in the different higher courses but the

bachelor's course in American univer-sities is about the same in quality and

amount, and much the same in subjects,

as that given below. The chief varia-tion is in the foreign language taken,

which is often, Greek, French, German,

or Spanish, or any two of them, in-stead of Latin alone.

An idea of the training given in these

quired to pass examinations, one com-

plete volume at a time. The "News" learns from President Paul that he has

been a non-resident student with the

Wesleyan for thirteen years: and that

his course, in order to take the three de-

FOR BACHELOR DEGREE.

The first part was a college course of four years, leading to the degree of

Ph. B. and covering the following au-

Davis-Surveying.
 Newcomb and Holden-Astronomy.

9. Fresenius-Qualitative Analysis.

11. Coulter-Rocky Mountain Botany

grees, has been as follows:

thors and subjects: 1. Wells-University Algebra.

Wentworth-Geometry.

Davis-Trigonometry.

Avery-Physics.

8. Dana-Mineralogy

10. Gray-Botany.

Avery-Chemistry.

line. All of this was heavy work.

ket Agent E. L. Lomax, of the | past, it should be stated that their | duction of the grade to the standard of work is still a source of wonder and astonishment to those who are familiar with railroad construction, that with Included in the bership of that party was a represtative of the "News" and he was the limited resources of machinery and to passengers. ry much interested in the stupendous COOPER'S LAKE TO LOOKOUT. achieved such results in so short a time

end of 35 feet in length, built according verts. lern constructio From Rawlins to Tipton is a distance cont and crossing the Continental Divide at Creston, where the waters of the At-lantic and Pacific separate. The alti-tude of this divide is 7,100 feet. On this new line cuts and fills are with the same standards in mind, an-other piece of line was built 26 miles long, saving a distance, as compared with the old line, of 12 miles. In re-ducing the amount of curvature to the minimum standard adopted by the GREEN RIVER TO BRYAN.

ENTIRELY CHANGED. The line was changed entirely at the North Platte river crossing so as to out curvature and reduce the To accomplish this it was ne-

cessary to put in a new steel bridge

across the river, won concrete piers and abutments with pile foundations.

consistingg of four spans of Deck Plate

Girder bridge, 103 feet long each, and

an additional deck girder span at each

take

grade.

GREAT MOUNTAIN MOVING SHOVEL DROPPING ITS LOAD IN A CAR. ing been done within a year. line has no bridges on its | entire length, every water course being carried under the embankments

by cast iron pipes or stone arch cullocomotives for the transportation of the material.

nect with the end headings, until a heavy flow of water caused a suspen-sion of work. Excavation is now in

struction, a central shaft was sunk, the This was only made possible by the top of which being 31 feet above grade, use of the most improved and newest From the bottom of this, headings kind of machinery of all kinds, requir-ing the use of a large number of steam pushed as rapidly as possible to con-

which are being acpieces of work emplished and some of which have Overland Route." However, in order to correct the unavoidable errors in the been finished.

verland Route."

When construction began on the Union Pacific about thirty-five years go the knowledge of the country posused by engineers was limited com-pared with that which is at their disposal at the present time; but notwithstanding this fact the line of railway was located along the best route that has ever been found. Some local faults grade and curve details occurred and and built were those between Laramie and Raylins, viz.: Bona to Bosler, tese are what have been and are being Mended together with the elimination of step grades and long detours by much berning. The inspection of this Cooper's Lake to Lookout, Lookout to Medicine Bow. This work involved the construction of about forty-five miles of line and accomplished a saving in mighty work has kept the newspaper rests of the Union Pacific busy and slighted and filled with wonderment distance of practically nineteen miles. The improvements consist in the re-

the tearly a week past. The "News" man obtained a nume of photographs, two of which are Mat Aspen tunnel and the other of the of the big steam shovels which have proved such great factors in the

yan Magazine shows that a number

Utah men have been enrolled in the

b-resident courses of that institution.

ar. George Bailey, Salt Lake City,

of John F. Engle of Logan, Supt.

ander A. Ostin, of Eureka, and Mr.

Bert Edgar Wilson of Ogden, took

it this year the degree of bachelor of

liceophy, Ph. B. Prof John M. Mills

the Latter-day Saints' University,

sk the higher degree of master of

19, M. A., in history, while President

H. Paul of the L. D. S. University,

ek out the highest degree, doctor of

llesophy, Ph. D. in Christian theism

of twenty-one baccalaurente degrees aftered, four went+to Utah men; of Heen masters' degrees conferred, one

tht to a Utah man; and of eleven doc-

a degrees conferred one went to a tah man. This shows that Utah must

tah man. This shows that Utah must and far above the average in the imber of graduates from the Illinois televan; for the graduates are from mada, England and India. President instaury (Ph D. in chemistry) and t Talmage (Ph. D. in geology) are aduates of the Wesleyan. It appears from these facts that the matis of university training are by imagan limited to those who can at

means limited to those who can at

ad universities. It is well known that many, and perhaps most of the

state scholars, have not received it shucation by attendance at uni-mittes. The late Prof. Orson Pratt, stample, who, in the sixtles, taught

ther mathematics, including analytics

d calculos, in the University of

sugges, including Hisbrew, yet he lended no university whatever for

magnificent education.

d political science.

This is a cut-off of 15 miles, reducing the distance three miles, as compared The distance three miles, as compared in thin layers and rolled with the old line, having only one curve from one end to the other. The re-

as were shown in the building of "The This is a cutoff of four miles in distance, and is almost an airline. To show a comparison the new line crosses the old one at seven different places. earlier work and to facilitate the move-

ment of the ponderous amount of traffic carried over the line the work of today LOOKOUT TO MEDICINE BOW. has been deemed necessary and advis-able; and it is with a feeling that both the patrons and the raliway company will feel the great benefit of it that the Union Pacific takes out of its treasury minimum standard adopted by the comthe sum of \$10,000,000 and puts it into pany, it necessitated making heavy cuts and fills, notably the one at Foot

Creek. The Foot Creek fill, as it is known, The first three cut-offs authorized an embankment forty feet high and 2,000 feet long was built by the use of grading machines, which plowed and loaded the dirt into patent dump wagons, in which it was hauled and dumped into the embankment. After leaving Green River, the Union The equipment application of the summit of a piece of engineering of stupendous After leaving Green River, the Union lasted from May to November, 1899. This plece of work has been pronounced one of the best constructed large rail-road embankments that has been built

in recent years. The material having been spread in thin layers and rolled

A new piece of line was built from Green River west to Bryan, a distance of about eleven miles. On this line westward for a short distance, from Green River to Peru, the summit of a mountain, the Union Pacific has done

and dumped into the embankment. The equipment employed consisted of five graders and forty dump wagons. The material obtained from the borrow pits was a sandy loam, and the work from the river, straightening the road and curvature, so that it is well night As one looks up at the big cuts and fills, he is filled with awe, wonder and this fill was made in a novel way-by

Over this same region the Union Pacific has just opened a new line piercing the same mountains over which the Union Pacific trains have been climbing since the road was first opened. Where heretofore such large valleys as Texas, Lone Tree and Dale Creeks have been bridged, the company at largely increased expense, has made solid embankments, giving the greatest amount of safety at all times from wash or any other cause.

BUFORD TO LARAMIE.

To secure a low rate of grade and easy curvature, it was found necessary put in a tunnel through Sherman to put in a tunnel through Sherhalt Hill, through hard granite rock, 1800 feet long, of ample dimensions for the largest loads to pass through. IMMENSITY OF WORK.

To show the immensity of the filling work, let it be stated that the crossing of Dale Creek is 900 feet long, 120 feet high, and that 500,000 cubic yards of Sherman gravel was used in constructing the embankment; that the crossing of Lone Tree creek is about 800 feet

One celebrated point of rock on the progress at the ends only. edge of Dale Creek, Gibralter Cone, 100 feet high above the grade line, was drilled and loaded with about 1,000 kegs of black powder and 1,000 pounds of dy-namite, and on the Fourth of July, 1900, this enormous charge was set off, blow-ing out the whole of the hill.

GREAT ASPEN CUT-OFF.

Among the many improvements in ourse of construction at present by the Union Pacific, the cut-off from Leroy to Bear River, Wyo., is one of the first importance and avoids the celebrated Tapioca Hill, at best a very difficult piece of road to operate at all times of the year, but particularly in winter. Through this section, the old line found its way as best it could, with many a sharp and dangerous curve, grades so heavy that helping engines were required for all heavy trains in both directions.

Leaving Leroy, the new line, with graceful sweep, follows from side to side the historic Mormon Pioneer Valley, a listance of 11.45 miles, to Aspen Tunnel This is the largest single piece of work ever undertaken by the the Union Pacific, It pierces Aspen ridge, one of the eastern foot hills of

est depth below the surface is 455 feet. The highest point above sea level reached is 7.296 feet. The tunnel will be finished for a single track. It will be lined throughout with timber and finally with concrete, making it, when finished, one of the most perfect pieces of work of the kind on the continent. A peculiar feature of this work is the taking out of the tunnel material with steam shovels. All power is furnished by large air compressors. A perfect electric lighting system has been installed and ventilation is secured in all workings by fans of improved patterns. This new line is 22 miles long and shortens the distance ten miles as compared with the old line with very small amount of curvature, and has long dis-tances of straight line where high speed can be attained without difficulty. The officials of the Union Pacific who

were instrumental in recommending these changes and assisted in earrying them out to a successful end were President H. G. Burt, General Manager E. Dickinson, W. L. Park, superintendent; W. A. Whitney, assistant su-perintendent; H. W. Sheridan, Green River, trainmaster; F. B. Parker, assistant superintendent.

annanananan [] ment on board, and when they reached his name in the list one of them glanced around him and finally let his eyes rest on a pompous individual sitting alone at a table in another corner of the room.

> "'I will lay you a guinea,' the young fellow said, nudging his companion and pointing to the pompous passenger, "that chap over there is the M. P.'

"The other fellow looked at the pasenger for a moment and then shook

his head good naturedly. " 'No, you won't,, he answered, 'I will

lay you a guinea myself that he's the M. P

"Now, as there were something like 200 passengers in the first cabin and as the young men were willing to lay even money with the chances 199 against them, I felt myself compelled to accept the bet purely on the strength of the

'If you have no objections,' I remarked, 'I will go you each a pound that your friend over there is not the member of parliament." "They both snapped me up with a

good humored eagerness which suggested the theory that they looked upon me as an exceptionally easy one. The decision was to be left to the purser, and in a few moments he came in, and we learned that the pomposs passenger was merely in the wool business. I took a sovereign from each of the young fel-

lows and went on deck. "But I felt guilty. According to the odds it seemed little short of taking pennies from children, and I decided would give them a chance to w'n their money back. Pretty soon the two came up and joined me. "We were on the weather side of the

we were on the weather side of our ship, and I finally made up my mind that the next man who appeared on that deck I would offer to bet was the M. P. In a couple of minutes a man came around the after orbin, beating his way toward us against the He conformed to my conceptions of a British member of parilament about as much as an up-state parson would, and I chuckled to myself "Go you a pound each,' I said, 'that

that is our colltical friend." "They thought I was making fun of them, but I put up the two sovereigns

in their hands and we left the decision

captain's right.'

"I don't know what those young Brit-ishers think of me," signed the Ameri-can, "whether they take me for a mindwent down to dinner there was that

26. Walker-Political Economy Many Utah Men Taking the Non-Resident Courses of the vanced course). 27. Wilson-Treatise on Logic. 28. Baldwin-Psychology; and James-Illinois Wesleyan University. Psychology. 29. Bascom-Ethics. 30. Bushnell-Nature and the Supernatural. The July number of the Illinois Wes- | out attending a university, get an edu-31. Bowne-Studies in Theism. 32. Fisher-Grounds of Theistic and cation in many of the higher lines, if they will work for it. In general, it is

Christian Bellef. said that the only really indispensable 33. Caesar-Gallic War; and Cicero-Orations

condition of successful home tudy, is keeping at it, reg-ularly, every day; for if the study of any branch is interrupted for a 34. Vergil-Aeneid. 35. Horace-Odis and Ars Poetica. Tacitus-Germania and Agricola. The course is, however, subject to few days now and then, it is extremely change; and many of the authors on the It will be of interest to "News" readabove subjects have now been superers to know what a university course seded by later authorities.

THE MASTER'S DEGREE.

The degree of M. A. was taken main-

ly in political and social science, as follows: 1.-Bluntschli-Theory of the State. 2.-Maine-Early History of Institu-

tilons.

Maine-Village Communities.
 Fishback-Elementary Law.
 Hojland-Elements of Jurispru-

6.-Hadley-Roman Law.

courses may be gained by noting the subjects and authors on which the can-didates at the Illinois Wesleyan are re-7.—Smith—Wealth of Nations. 8.—Ricardo—Political Economy. -Ely-Problems of Today.

10 .- Bullock-Economics. 11.-Andrews-History of the United

States (two vols.) 12.-Freeman-Chief Parlods of Euro-

pean History, -Amos-Science of Law 14.—Cooley—Constitutional Law. 15.—Small & Vincent—Sociology. The master's degree can be taken in

various other subjects, the only simi-larity with the above being in the amount of study required.

THE DOCTOR'S DEGREE.

The degree for Ph. D. in Christian theism, comprised, in addition to the work for M. A., which is counted to-ward the doctor's degree, the following L-Bowne-Introduction to Psychologi-

2.-Ladd-Lotze-Outlines of Psycholo-

magnificent education.
in the modern scientific professions engineering, medicine, etc., attend-sensible for the laboratory
in the sof bistory, literature, political etcs, law, philosophy, and even lan-ares, attendance at universities, lite still desirable and helpful, is not
in the soft of 3.-Bowne-Metaphysics. 4.-Porter-The Human Intellect. 5 .- Hicks-Critique of Design Argu-

ments. 6.-Arthur-Physical and Moral Law. 7.-Harris-Philosophical Basis of The-

-Janet-Final Causes. .-Harris-Self Revelation of God. 10.-Bowne-Philosophy of Theism. 11.-Sedgwick-The Methods of Ethics.

11.-Sedwice-Fine herboard of Ethics. 12.-Bowne-Principles of Ethics. 13.-Green-Projegomena to Ethics 14. Jack Supernatural Revelation.

UNIVERSITY WORK PURSUED AT HOME. 21. Anderson-History of France. 22. Sheldon-General History. 23. Gulzot-History of Civilization 15.—Caird—Philosophy of Religion. 16.—Lotze—Philosophy of Religion. 17.—Caird—Evolution of Religion (2 Sheldon-General History.
 Guizot-History of Civilization. 24. Gallandet-International Law. 25. Robinson-Elementary Law. vols.) 18 .- Edersheim-Life and Times of Je-(adsus the Messiah (2 vols.) 19 .- Steinmeyer-The Passion and Res-

urrection History.

20.—Schaff—The Person of Christ: The Mirzele of History. The above course could be read with profit as it stands, by any one of ma-ture years, every volume being a sober but interesting investigation. The courses in geology, chemistry, mathematics, history, philosophy, Latin, Greek, biology, etc., are just as thorough as those in political science and theism represented by the above studies.

King Edward Presents Medals.

London, July 26 .- King Edward presented medals to 3,000 returned yeomanry at the horse guards parade here today. The ceremonial was the same as observed at the former presentation of medals, but the inclement weather robbed the function of its brilliancy. Queen Alexandra and Prince Edward, son of the Duke of Cornwall and York, were present. Considerable comment has been aroused by the refusal of 32 non-commissioned officers and men to attend the ceremony, on the ground that their pay was in arrears. These men have addressed letters to King Edward, pointing out that they cannot submit to be decorated while their wives and families and some of their number are starving. The claims of the men who say they have not yet been paid very from $\pounds 63$ to $\pounds 127$. Some of the claim-ants allege that they have had to pawn their earlier medals in order to procure food for their families.

Heavy Rains in Kansas and Missouri

Kansas City, Mo., July 26.-Heavy rains were reported this morning at Springfield, Mo., and Pittsburg, Kansas, and in Sedgwick county, Kansas, At Springfield a half inch of water fell and at Pittsburg, where the fall con-tinued for two hours, practically ending the drouth in that section, great good will result to pastures. Other points in the southwest reporting rain since yes the southwest reporting rain since yes-terday morning are Muskogee, Antiers and Ardmore, L. T.; Guthrie, O. T.; Ellis county, central Kansas and Gra-ham county, southern Kansas; Little Rock, Ark.; Abilene, Texas and Santa Fe, N. M. The temperature in Kansas t 10 o'clock this morning was 88, four degrees cooler than at the same hour yesterday.

Bark Lizzie Bell Wrecked.

London, July 26.-The British bark Lizzie Bell, Capt. Whelan, bound for New Castle, N. S. W., has been wrecked at Cape Gwent, New Zealand, and twelve of her crew are missing.

Up at Fort Sheridan they have been | a giant. His herculean frame was silhouetted against the sky, and as his flags wig-wagged back and forth the tearing down the old wooden shacks which twelve years ago sheltered the enemy in the trenches caught sight of two companies of the Sixth Infantry him full and fair. A battery of artillery which were "jumped" to Chicago at the was trained on the place held by the signal men. It took but a minute to get time of the hanging of the anarchists. The old guardhouse, a jail only in few yards of the flagmen. Another name, the commissary building and the shaky pine barracks have gone. There still stands, however, though its doom

room structure which served as the quarters of Capt. David L. Craft, Sixth United States Infantry. When this pygmy building tumbles there will have ever lived. Remembrance of this plain, blunt soldier should not be allowed to

sent him by one general officer to an-other in the valley beyond. Craft was Record-Herald.

LOOKS OF A BRITISH M. P.

Two Wagers That Indicate That Statesmen Are Hard

"I made a bet, or rather a couple of | place, and the tables were pretty much hets, on the way across," remarked a all in use. Over in one corner there were passenger on one of the liners which arrived here the other day from Liver-pool, "which are entitled, I think, to seat next to them, I took it and pushed

"The young fellows had a passenger "After we had taken on the mall at list between them and with the fresh-Queenstown and our ship had straight- ness of Britishers going out to the reader or a confidence man. When we ened herself out for the run home I states for the first time, they were disdropped into the smoking room for a cussing the probable status of their fellow voyagers with the utmost free-were some fifteen or twenty men in the dom. There was a member of parlia. York Sun.

the valley showed him the signaled order to leave his post and to retreat to the camp. The initial message was not The fragment of a shell shattered the ng himself to his full height he made a flagpole of his uplifted arm and finished

to Fick Out.

mounnounnounnounnounnounnound

freak wagers made at sea.

some sort of place in the list of the | the button.

One day in front of Petersburg a sec-ond lieutenant of the signal corps was ordered to the top of a hill with two companies to transmit flag messages sent him by one general officer to an-other in the valley beyond. Craft was

came, and one of the little party was dead and another was dying. Craft alone stood uninjured. The signal flag is sealed, the little one-story, twowig-wagging went on, Craft's message was only half completed. A glance into

How Lieut. Craft Finished the Message

annown annown annown annown annown and a second sec

die. The old description fits him well; dug graves all about him.

wreath placed on his grave Memorial day should be made of immortelles. One day in front of Petersburg a sec-ond lieutenant of the signal

disappeared everything on earth save vet finished. Craft kept on wig-wagging. an insignificant little headstone in a flagstaff in his hand. Another frag-Pennsylvania cemetery, to remind one | ment tore his left arm. Grasping the that such a person as David L. Craft | red banner th his right hand and rais-

