

COMPARATIVE STRENGTH OF SEVERAL STYLES OF FRAMED TIMBER SETS—SIMPLEST METHODS BEST FOR HOLDING HEAVY GROUND.

Conditions in one place were such that the sets would be down in six weeks if not relieved; both caps and posts would be half moons. Sawed 10x10 or 12x12-inch caps and posts had to be relieved every morning in certain sections of the ore-shoot. This meant that every stick was overloaded, hence the exceptional opportunity for trying out different styles of framing sets.

Several methods of framing were tried, but it was found that any cuts made in the posts or caps weakened the timbers considerably and that the timbers failed by splitting. This was especially true of the posts. The simplest method was found to be the best. Caps, posts and sills were sawed the proper length and shape, and planks, spiked to the lower side of the caps with thirty-penny spikes, formed a shoulder that prevented the post slipping and obviated the necessity of cutting notches and thus not only weakening the timber but creating a starting place for the timber to split. It was found that 8x8-inch timber framed this way would stand as much as 10x10-inch timber framed with even a slight single notch in the cap. One and one-half inch plank was used for 8x8-inch timber, 2-inch plank for 10x10-inch timber, and 2½-inch plank for 12x12-inch timber. These planks held the posts so that they would break at almost any point before they would split. The planks never buckled or slipped. This method not only saved much time in both framing and setting but gave much stronger timbers.

Probably the principal reason notched timbers fail by splitting is due to the impracticability of getting a perfect fit, thus causing excessive pressure at certain points and splitting the timber.

Many types of timber framing have their uses for certain cases, but in a great many cases money for mine timbers and retimbering, and much of the expense for framing and putting in sets, would be saved if

more consideration was given to the utilization of the entire strength of the timber and not so much to the beauty of the even notches and tenons.—Abstract of an article by K. C. Parrish, E. and M. Journal.

George Ade, Purdue's most distinguished alumnus, contributed a poem on girls for the co-ed's issue of the Purdue Exponent, which has just appeared. Following is a sample of the humorist's lyric:

"I want to live in a college town
Where men are thick as bees,
Where the noisy boys in corduroys
Are grouped beneath the trees.
Each night a light
In a parlor bright
And a song in the key of G,
With a real Dutch lunch
For the midnight bunch;
A college town for me."

The above is hardly in harmony with a serious journalistic venture by young women, so I hasten to add No. 2 as antidote:

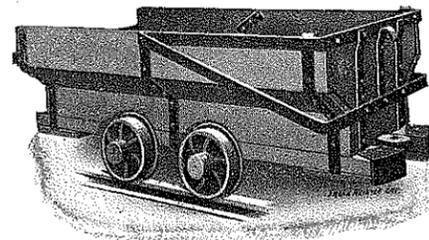
"You've heard the chanticleer declare
That when he flops his wings and crows
The sun emerges from its lair
And o'er the earth a splendor throws.
O mighty herald of the dawn
Your occupation's done;
The cock-a-doodle of the men
No longer awes the cackling hen.
For I'm quite prepared to demonstrate to you
She rules the rooster, too.

REFRAIN.

"O happy, fast approaching day,
When woman has her own sweet way,
Within six months our country's flag
Will be a talcum powder rag."
—Denver Times.

The tracks that great men leave behind
Upon the sands of time
Oft show they wobbled 'round a lot
Before they got sublime.

Modesty is a great virtue, but a man seldom gets his salary raised on the strength of it.



**CONSULTING, DESIGNING
and CONSTRUCTING
ENGINEERS
FOR
COAL MINE
EQUIPMENT**

**THE C. S. CARD IRON WORKS CO. DENVER
COLORADO**

The COLORADO SCHOOL OF MINES MAGAZINE

Vol. I.

GOLDEN, COLO., JUNE, 1911.

No. 9

The North Platte Project—U. S. Reclamation Service.

Andrew Weiss, '99
Project Engineer.

The North Platte Project.

The North Platte Project contemplates the storage and diversion of the waters of the North Platte River for the irrigation of lands lying in the North Platte Valley, in Eastern Wyoming and Western Nebraska. At the present time active operations on this project are confined to the construction of two principal works, the Pathfinder Reservoir, in Wyoming, and the Interstate Canal and its distributing systems, in Eastern Wyoming and Western Nebraska. The construction work on the Pathfinder Reservoir is about completed, but the completion of the Interstate Canal and its distributing system will require about two years more, with the probable amount of available funds. The Interstate Canal irrigates a tract of land of about 130,000 acres, on the north side of the river, between Whalen, Wyo., and Bridgeport, Nebr. There are also under investigation two additional units, namely, the Goshen Park Canal and the Fort Laramie Canal, which contemplate the irrigation of 150,000 acres and 80,000 acres, respectively, on the south side of the river, between the towns of Guernsey, Wyo., and Bayard, Nebr.

The North Platte River and Its Water Supply.

The North Platte River carries the run-off from a large and mountainous territory. Its catchment basin contains the mountains surrounding North Park, in Colorado, and the Ferris, Green, Seminole, Laramie, and inferior ranges in Wyoming. Through its tributary, the Sweetwater River, it also carries the run-off from a considerable portion of the Continental Divide. Rising in the mountains of Northern Colorado, the river flows in a northerly direction into Wyoming, where, after traversing half the State, it

turns to the southeast and continues in a southeasterly direction to its junction with the South Platte, in Central Nebraska.

These geographical features determine largely the principal characteristics of the stream. During the spring and early summer the melting snows of the mountains swell its volume to large proportions, while in the late summer the long continued drouths shrink its volume to that of a small stream distributed over a wide stretch of shifting sand. On account of this irregularity of flow it was found necessary to provide means for the storage of the floodwaters of the spring and early summer, in order that they might be delivered to the lands under the various canals evenly through the season. To meet this necessity the construction of the Pathfinder Reservoir was determined upon.

The average run-off of the North Platte River at the Pathfinder Reservoir is 1,450,000 acre-feet, or about five times that of the Cache La Poudre River, in Northern Colorado, which irrigates the famous Fort Collins District. With proper storage, such as is contemplated by the use of this reservoir, there need be no fear of water shortage on any lands which may be watered by canals from this river for some years to come. An abundant supply of well water, of excellent quality, may be reached at all points on the project at depths ranging from 60 to 300 feet.

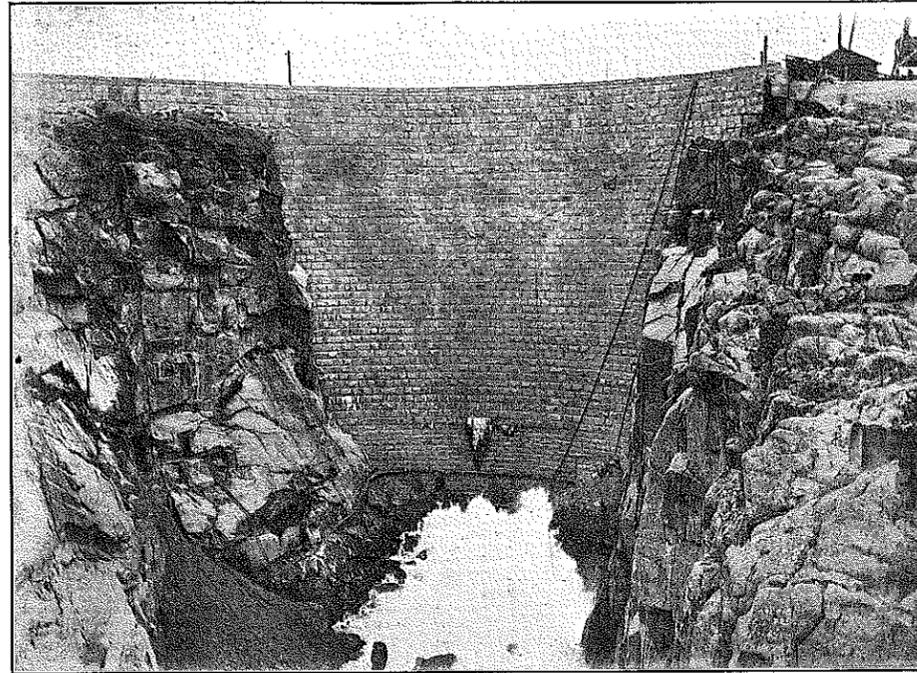
Pathfinder Reservoir.

The Pathfinder Reservoir is situated in Central Wyoming, and is formed by the construction of a masonry dam in the bed of the North Platte River, three miles below its junction with the Sweetwater. The Pathfinder dam is of the arched type, the radius of its center line being 150 feet. It is built

of uncoursed cyclopean granite masonry, except the two faces, which are laid in two and three-foot courses. The height is 214 feet above the river bed. It is 432 feet long on top and 80 feet long on the bottom. The top width is 14 feet, providing a 10-foot roadway and the bottom width is 90 feet. A spillway, 700 feet long at the north end, is now under construction. This spillway is being cut in the rock abutment and will be provided with a low concrete weir. The area of the reservoir at the level of the spillway, which is at an elevation 5,852 above sea-level, is 22,525 acres, and its capacity 1,100,

additional outlet at a higher level was decided upon. This second tunnel is cut in the natural rock on the south side of the dam, and is 360 feet long and 12 feet by 13 feet in cross-section. This tunnel is closed by six needle or balanced pressure valves, five feet in diameter. The installation of these valves will be completed after the close of the present irrigation season.

In connection with the Pathfinder dam, there has also been constructed an earth dike during the season of 1910. This dike closes a gap in a gravel ridge about 1,500 feet south of the masonry dam. The lowest



PATHFINDER DAM, LOWER FACE—COMPLETED OCT. 7, 1909.

000 acre-feet. The construction of the Pathfinder dam was begun in September, 1905, and completed in June, 1909.

It was the original intention to release all the water through the tunnel cut in the natural rock on the north side, used to pass the river flow during construction. This tunnel is 481 feet long, 10 feet by 13 feet in cross-section, and has a capacity of 7,000 second-feet under full head. It is closed by four sliding cast iron gates, 6 feet 2 inches by 3 feet 4 inches clear opening, separated by concrete piers 3 feet in thickness, the tunnel being widened to maintain ample sectional area. These gates are under 180-foot head when the reservoir is full. The force of the water which was discharged under 164-foot head during the season of 1909, was such as to damage the tunnel lining and an

depression in this ridge is 20 feet below the spillway level. The top of this dike is built to an elevation 20 feet above the spillway level, and it is strengthened by using a concrete core wall, by the selection of impervious material for the interior and by heavy paving on the reservoir side.

Diversion Dam and Headworks.

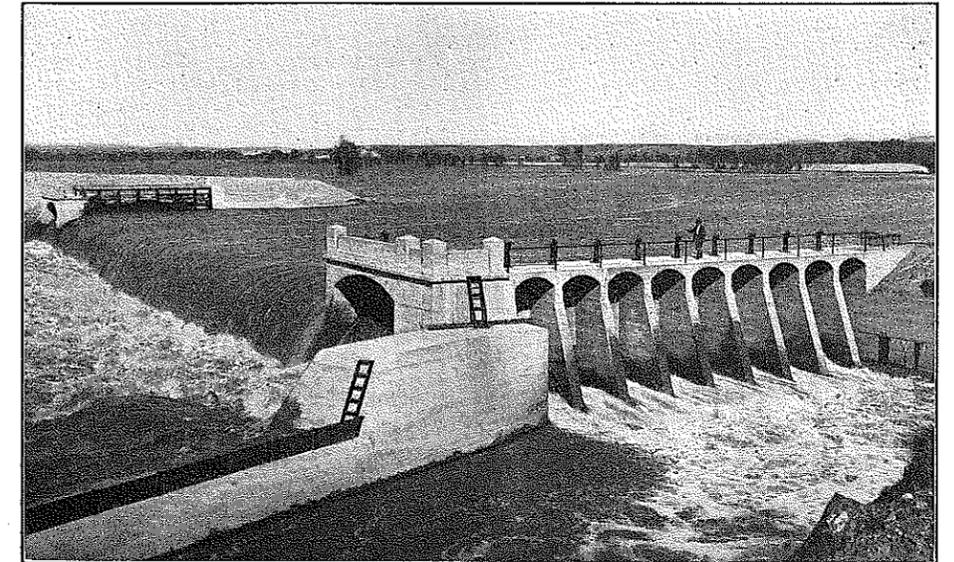
The diversion of the Interstate Canal from the North Platte River, is effected by means of a concrete overflow weir of the ogee type, with a height of 26 feet at the highest place and a length of 300 feet. At the north end of this weir are the headgates and sluice gates of the Interstate Canal, and at the south end are connected the headworks of the Fort Laramie Canal, should the same

later be constructed. Adjoining the Fort Laramie Canal headworks on the south end of the weir and extending across the river bottom is an earthen embankment 2,000 feet long, with a crown elevation 13½ feet higher than the overflow crest of the weir and with a covering of coarse gravel and boulders to a thickness of 18 inches. The side slopes of this dike are 2½ to 1. The concrete work rests on a foundation of conglomerate rock its entire length.

Interstate Canal.

The Interstate Canal, as originally planned, extends from the headworks at

efficient in Kutter's formula, .025. The calculated velocity was exceeded when the depth reached but six feet, and to control the velocity, as well as to facilitate irrigation operations, a system of check gates was built throughout its entire length. The cross-drainage structures on this canal, such as culverts, flumes and siphons, are of reinforced concrete. The highway bridges are supported by combination trusses on the first 50 miles of the canal and by steel trusses on the remaining portion. On the first 50 miles of the Interstate Canal the cross-drainage structures consist of two reinforced concrete flumes, three culverts, one siphon and three overflows. In addition,



INTERSTATE—WHALEN DIVISION DAM AND HEADWORKS.

Whalen, Wyo., to a point near Bridgeport, Nebr., a distance of approximately 170 miles. At the present time the canal is completed to a point about 10 miles north and four miles east of Minatare, Nebr., a distance of 115 miles. This portion of the canal is supplying water to lands on the north side of the river between Whalen, Wyo., and Nine Mile Creek, in Nebraska, exclusive of lands already under irrigation by private ditches, covering mainly first bottom lands. The average elevation of these areas is about 4,000 feet above sea-level.

The Interstate Canal has a calculated capacity of 1,400 cubic feet per second for the first 28 miles, after which the capacity is reduced to suit the demands upon it. Its bottom width is 34 feet, side slopes 1½ to 1, depth 13 feet, and water depth 10 feet. The crown width of the canal bank is 10 feet or over. The canal was designed for a velocity of 2.8 feet per second, using the co-

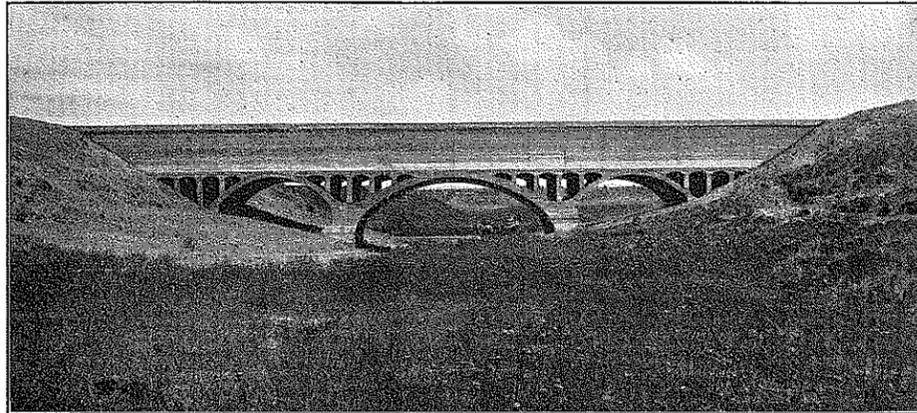
there are three wasteway structures at suitable points on the main canal from which the canal may be relieved in times of need. All of the above structures are of reinforced concrete. The cross-drainage structures on the second division of the main canal consist of three combination culverts and wasteways, two siphons, and three single-compartment semi-circular culverts, all of which are built of reinforced concrete. In addition, there are a number of underdrains of vitrified pipe, constructed at suitable points on both divisions.

The plan of irrigation under the Interstate Canal comprises three lateral districts. In addition, there is a tract of land of about 17,870 acres in Wyoming, controlled by a private corporation, for which the Government delivers the water in bulk at the headgates. Water was first delivered to this private tract, which is a Carey Act selection, in the season of 1906. The First Lateral

District has received water since the season of 1908, and the Second Lateral District since the season of 1909. A portion of the Third Lateral District, comprising 8,800 acres of irrigable land, will receive water for the first time in 1911. The areas of the First, Second and Third Lateral Districts cover 36,760, 34,100, and 38,000 acres of irrigable land, respectively. In addition, there are a few tracts, aggregating 2,540 acres, which will later be irrigated, but which are

made of wood. In connection with the Interstate system, it is planned to build three inland reservoirs, having capacities of 13,000, 27,000, and 90,000 acre-feet, respectively, which will enable more water to be saved from the flood flow of the river and will care for the irrigation of the Third Lateral District.

The irrigable area under the Interstate Canal covers 129,270 acres, of which nearly 18,000 acres is controlled by a private corpo-



INTERSTATE—SPRING CANYON FLUME, AUG. 29, 1907.

now held in reserve. The distributing system was built by the Service so as to reach the high point or points on each farm unit, from which the farmer makes his own distribution. In conformity with the usual plan the Reclamation Service also operates these laterals, delivering the water to each farmer

mentioned above. With the completion of the system there will be irrigated a total of 111,400 acres by the Reclamation Service. With the beginning of the season of 1911, there will be available for irrigation in the First, Second and Third Lateral Districts, 78,800 acres, of which 70,000 were covered in 1910.



INTERSTATE—DROP 12, LATERAL 21 MAIN, MAY 19, 1909.

at his land, measured over a weir. All drops, turnout boxes, headgates and other miscellaneous structures, which carry 10 second-foot or over, are built of reinforced concrete, while the smaller structures, such as individual farmer's turnout boxes and weirs, are

Soil and Crops.

The soil is a sandy loam of excellent quality, free from alkali and other injurious substances. It is easily worked and particularly well adapted to the raising of alfalfa, potatoes, and sugar beets. The principal products are alfalfa, cereals, corn, sugar beets and potatoes.

Climate.

The climate of the North Platte Valley differs but little from that of Northern Colorado. Owing to the absence of trees and wind-breaks, the effect of winds is more severely felt and the soils being somewhat lighter than those in the vicinity of Denver or in the Poudre Valley, yield more readily to wind erosion. For this reason our farmers are aiming to plant their land largely into alfalfa and go into the feeding business, rather than the growing of small grains or potatoes. The range of temperature is practically the same as it is in the South

Platte Valley, it being, perhaps, two or three degrees colder in winter and about the same amount warmer in summer, during the days when extreme temperatures prevail.

Settlement.

A large portion of the lands under this project were settled during the 80s, at a time when there was a pronounced homeseekers' movement westward into the arid belt. A succession of dry years followed, and with few exceptions, these early homesteads, with their sod-house dwellings, were abandoned by the discouraged and impoverished pioneers. Some years later, recognizing the need of irrigation, the ranchmen and cattle owners occupying the first bottom lands along the river began building a series of small canals to irrigate tracts of from 5,000 to 8,000 acres by community effort, and succeeded in covering the most of these lands between the years 1887 and 1900. One of these projects was of more ambitious dimensions and proposed the irrigation of some 60,000 acres of table land on the north side of the river, between the state line and Red Willow Creek, in Nebraska. Lack of proper organization, failure to appreciate the engineering problems involved, and financial reverses, particularly as occasioned by the panic of 1893, stopped further development of this project until the passage of the Reclamation Act in June, 1902, awakened a general interest in irrigation work throughout the West. Since then, this project has been practically completed by private capital, and a tract of approximately 50,000 acres of beautiful and fertile table land has been added to the irrigable area of this valley. The history of this project, however, illustrates the difficulties which were in the way of irrigating anything but the first bottom lands along the river, and for this reason the settlement of the valley was practically confined to a narrow strip following the river channel.

Since the inception of the North Platte Project, settlers from Eastern Nebraska, Northern Colorado, and other adjoining States have taken practically all lands available for homestead entry under the proposed canal and lateral system. It follows that at the present time, there are no lands open or available for entry except occasional relinquishments, which are sold by settlers desiring a change of location. The Reclamation Service has persistently discouraged the poor and ill-prepared man from attempting to undertake irrigation farming on one of these homesteads. It requires a capital of from \$1,500 to \$2,000 to make a reasonably good start. This, of course, applies to the men of average industry and ability. There are some who are making a success of it who came to this valley with practically nothing but a willingness to work and good business judgment. As a rule, however, it is risky to undertake irrigation farming on one of these

homesteads in such reduced circumstances, because the soils on these arid Western table lands do not produce as most Eastern people are led to believe. It is now generally recognized that these soils require the cultivation of alfalfa or other leguminous crops for a few years in order to make them highly productive. The amount of labor and expense necessary to put land into this condition is usually under-estimated by the Eastern farmer or by others inexperienced in irrigation work, and this inexperience and lack of knowledge results in much disappointment on the part of such settlers.

The size of the farm unit on the North Platte Project has been fixed at 80 acres of irrigable land. Frequently units contain a total of 120 or 160 acres, provided there is sufficient dry land to bring the irrigable acreage down to approximately 80 acres. No unit contains a total exceeding 160 acres. Under the Reclamation law, individuals holding lands in private ownership and receiving water from the canal are limited to 160 acres.

Payments.

The Reclamation law contemplates the return of the funds expended on the various reclamation projects to the General Reclamation Fund. At the time this project was approved in 1904, it was estimated that a charge of \$35.00 per acre would cover its building cost. The advance in costs of materials and labor during the years of 1905, 1906, and 1907, and the consequent raising of contractors' bids on all kinds of work, soon made it plain that this charge was estimated too low. The building charge was then advanced to \$45.00 per acre, with the proviso that during the first two years of water service no operation and maintenance cost should be taxed to the farmer. The present plan of payments provides for the return of the entire building cost within a period of ten years, as required by law; the first payment being \$2.00 per acre; the second payment \$3.00 per acre, and the remaining eight payments each \$5.00 per acre of irrigable land. Operation and maintenance charges are being assessed with the beginning of the third year of water service. These charges are estimated for 1911 at \$1.25 per acre.

Water Users' Association.

On most of the reclamation projects, containing any considerable proportion of private lands, so-called water users' associations have been organized. These associations are composed of the water users taking water from the Government works. They are formed for the purpose of assuring the Government that land owners will apply for water from its irrigation works when they are completed. As the Reclamation law contemplates that the irrigation work shall be

managed by the water users themselves, when the major portion of the funds are paid back to the Government, these water users' associations may later take over and operate these irrigation works, although the law does not expressly provide that such water users' associations shall be the corporations to manage the works. The law simply requires that when the major portion of the cost of the project shall have been returned to the Government, "then the management and operation of such irrigation works shall pass to the owners of lands to be irrigated thereby to be maintained at their expense under such form of organization and under such rules and regulations as may be acceptable to the Secretary of the Interior." It is expected that on this project the water users' association will ripen into the management of the project at the time the major portion of the Reclamation funds have been returned to the Government. Each homesteader or land owner using water from the Government works must become a share-holder in this association and must subscribe for as many shares of stock as he has acres of irrigable land on his holding. Such stock becomes a part of and attaches to the land and can be conveyed only by conveying title to the land. No one individual can subscribe for more than 160 shares. It is further provided that each share-holder must be a resident upon the land or live within the neighborhood thereof. The neighborhood limit has been fixed at fifty miles. Those owning more than 160 acres of land receiving water from the canal are obliged to dispose of their holding in excess of this amount. For the protection of such, it has been arranged for the association to hold in trust for the owner the amount of land which he owns in excess of 160 acres until it can be conveniently sold, as directed by the Secretary of the Interior or requested by the owner himself. The association assumes the duties of levying and collecting charges against the land, and of making suitable contracts with the water users and others, subject to the approval of the Secretary of the Interior.

Advice to Prospective Settlers.

There are excellent opportunities on this project for men of reasonable means with which to get started. These should particularly appeal to the young farmer in localities where good agricultural land has reached such high prices as to be beyond the man of small means. As indicated in the foregoing, however, it is not advisable for the average man to start here without means, either on a homestead or deeded land. It is estimated that one should have from \$1,500 to \$2,000 or more to make a comfortable start on homestead land, depending upon the price he has to pay for the relinquishment of the entry. At the present time relinquishments on homestead entries con-

taining in the neighborhood of 80 acres of irrigable land are being sold for from \$300 to \$2,500, depending upon the location, character of soil, and the character of its surface. Of course, the strength of the owner's desire to sell is a factor affecting the price. Deeded lands sell for from \$75.00 to \$125.00 per acre with water right unpaid.

NOTICE.

The Alumni Association has for some time been trying to locate the following graduates. If any of the readers of the Magazine know the whereabouts of any of these men please send what information they can to the assistant secretary at Golden:

Walter J. Atkinson, '96.
Charles F. Breed, '01.
Harry F. Bruce, '00.
Paul H. Carpenter, '10.
Burt Cole, '92.
L. A. Dockery, '95.
E. E. Greve, '05.
F. R. Hamilton, '98.
Leon P. Hills, '08.
George F. Hoyt, '96.
W. H. Jackson, '01.
Gilbert E. Jewel, '93.
B. M. Johnson, '08.
Fred B. Kelley, '99.
Oscar A. Lampe, '98.
N. W. Logue, '97.
William B. Middleton, '83.
Enrique A. Schuman, '97.
R. T. Sill, '06.
T. E. Stephenson, '06.
B. T. Wells, '04.
Charles E. Wheeler, '94.

To Take for a Headache.

"What do you take for a headache?"
"Liquor, the night before."—Toledo Blade.

An Inventive Genius.

"Whom do you consider the greatest inventor of the times?" asked the woman.
"My husband," answered the other.
"Why, I didn't know he ever invented anything!"
"You ought to hear the excuses he gives for coming home at 2 in the morning."

Sure Subtraction.

Freshby—"Professor, is it ever possible to take the greater from the less?"
Professor—"There is a pretty close approach to it when the conceit is taken out of a freshman."—Brooklyn Life.

Lives of great men all remind us,
As their pages o'er we turn,
That we're apt to leave behind us
Letters that we ought to burn.

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WALTER C. HUNTINGTON.....1912
ADOLPH BREGMAN.....1913
TSUNG TE KAO.....1914
SPORTING EDITOR.
HAROLD C. PRICE.....1913

VOL. 1. JUNE, 1911. No. 9

NOTICE.

At a meeting of the Executive Committee held May 11 it was decided best to publish The Colorado School of Mines Magazine every month in the year, instead of only during the College year, as originally planned. The subscription price will remain the same—\$1.25 per year. This barely covers the cost of printing and mailing the twelve copies.

We have a number of valuable technical articles promised for the near future, and as the Magazine is now the official organ of the Alumni Association, and will publish all the proceedings of the Association and the reports of the various committees, it will be to the advantage of all members of the alumni to be sure they have sent in their subscription. This is the only way to keep in close touch with the Association and School activities.

The Capability Exchange will of course be conducted twelve months in the year also.

This number has been delayed a little because of the rush of work the last days of school, and in order to report the reunion and banquet.

Some have asked why we did not rush to the defense of the School and its President,

answer the false charges made against both and deny the malicious untruths about the School and its management that have been appearing in a certain Denver evening paper every week or so for some months past.

What good would it do? Any persons foolish enough to let any statement in a paper of that class influence their judgment or opinions on any subject would not have sense enough to recognize the truth when they heard it.

Life is too short to stop to make explanations, and, "a gentleman will never insult anyone, and a blackguard can not." Furthermore, you cannot have anything to do with a tarred stick without great danger of getting a little tar on yourself.

We will, however, make a little statement as a possible answer to a question we have been asked a good many times, personally, by graduates and other friends of the School. The substance of the question is, "What possible motive can even a dirty, contemptible paper have in so attacking the management of one of Colorado's finest institutions?"

The only explanation we can give is this: Early last fall a student of the School was caught at dishonest practices in his school work, and, after the case was investigated by the regular faculty committee and he was proved guilty, he was suspended for one year, the lightest possible penalty possible under a rule adopted some years ago by the faculty. This student's father is generally understood to be a heavy stockholder in the aforesaid "certain Denver evening paper," and before the suspended student left Golden he openly made threats that he would "get even" with Dr. Alderson and the School.

Most Mythology is only idol talk.

If you want to set the pace, be sure you are on the right path.

A little knowledge is dangerous but it is worse not to have any.

People who have sweethearts get married; people who have affinities get divorced.

Certain wearisome persons who complain of mental cobwebs should try those new vacuum cleaners.

Two Irishmen were taking their first trip in a sleeping car. One climbed to the upper berth and the other crawled into the lower. Presently the one in the upper berth called down:

"Say, Mike, how are you gettin' on wid y'r new bed?"

"Well, I have me clothes off, but I can't get in this hammick."

**"WE ARE, WE ARE, WE ARE, WE ARE,
WE ARE THE S. S. M."**

We made noise enough, at least, Commencement Day, May 26, to convince all who attended the exercises, that the School has an Alumni.
As the class of 1909 contributed nearly

one-third of the members present at the reunion, and considerably more than one-third of the entertainment and noise, we will start this brief report of the reunion by printing a copy of the four-page program the class of 1909 got out for their reunion. We hope that a spirit of emulation will lead other classes to "make good" next year and not let '09 completely outdo them:

A New Wrinkle.



1909 Reunion May 22-27, 1911.

Mines, 1909.
Second Year Reunion,
May 22 to May 27, 1911.

MONDAY, MAY 22.

9:00 A. M.—Muck back and set up.
7:00 P. M.—Blow holes and spit.
12:00 M.—Headache from smoke.

TUESDAY, MAY 23.
Change day.

WEDNESDAY, MAY 24.

9:00 A. M.—General drilling contest single and double all over Denver.
1:00 P. M.—Free lunch in the main drifts.
2:00 P. M.—Afternoon shift at the Orpheum.
5:00 P. M.—Start pumps.
7:30 P. M.—Grand reunion banquet at Delmonico's. The '09 class cup will give the signal to hoist. Those desiring water may do so.
Music by original '09 Glee Mandolin Club. The '09 love song rendered passionately.
P. S.—Members must furnish their own spark buckets and stope wrenches.

P. P. S.—Talcum powder must not be spit before the engineer lifts the bucket.
P. P. P. S.—Cribbing and spikes furnished by pink will be collected at the portal.

12:30 P. Z.—* * * * * etc. (by permission of Elinor Glynn).

THURSDAY, MAY 25.

7:00 A. M.—Graveyard comes off shift.
8:00 A. M.—Bed time.
9:30 A. M.—Ham and—
9:45 A. M.—Joy ride on a White Rock taxi.
10:00 A. M.—Day shift comes on. Look out for missed holes.
12:00 M.—Lunch, Mozart.
1:30 P. M.—Seeing two foot-hills car for Golden.
2:30 P. M.—Arrive in Golden amidst a cave-in.
3:00 P. M.—General come-back at Gym.
4:00 P. M.—Preliminary practice rolling high and sour bawls at ball park.
6:00 P. M.—Dinner, Tramway depot.
7:30 P. M.—Magmatic segregation at clay pits superinduced by abundant lava flows.
12:30 P. X.—Prade; Seeing Golden.

FRIDAY, MAY 26.

7:00 A. M.—Gravitational readjustment.

10:00 A. M.—Baseball game. Faculty vs. '09. Ball park. Queensberry rules. Batting order:

Faculty.	'09's "Naughty" Nine (In Uniform)
Prexy, r. f.	Hic
Happy, c. f.	Krug
King Bill, p.	Toughy
Ham Smith, l. f.	Fat
Minor Smith, s. s.	Kirch
Jingle, c.	Chuck
Bunsen, 1st b.	Ogalala
Monte, 2nd b.	Kanuck
Hennon, 3rd b.	Sickles
	Spider
Water Boys: Tiny, Fat.	Sam and Ben.

Substitutes:

Pink.....Skee Tenor
Bright Eyes, Sr. and Jr., coaching staff.
Mascot—Trap.
Umpire—Mayor Hoyt.
Ground Rules—Over the fence is out.
No hobble or Haraem uniforms allowed.
Bats unlimited—to muck sticks.
Carnegie medal for three-base hit.
Kegs outside of coaching line.
Pitcher allowed two "Bocks" during game.
Spectators:
John the janitor.
Blitz and Pal.
Assembled multitudes.
Cheer leaders for faculty—"Fellows."

11:30 A. M.—Class swim at pool room.
12:00 M.—Alumni lunch.
1:00 P. M.—Prade to Prexys. P. S. Cigars.
2:00 P. M.—Commencement at Synagogue.
4:00 P. M.—Examination and report Prexys pink tea.
Prom.
SATURDAY, MAY 27.
7:30 —Alumni banquet at Albany Hotel.
2:00 P. X.—Reunion at County Hospital, paupers' ward.
Send no flowers.

When we get in better shape financially we hope to be able to hire E. C. Brooks ("Toughy") as our cartoonist.
The Faculty 1909 baseball game was a grand success, and from an entertainment point of view was ahead of most 'varsity games. Owing to a somewhat delayed start, only six innings were played, and the result was a tied score of 14 to 14 by runs. By errors we understand the score was 40 to 39 in favor of the Faculty. The "Naughty Nines" made a very unique team in domino suits and caps. There were home runs made on wild throws, or wilder attempts at

stopping the ball, and all kinds of exciting plays.
The score:
1 2 3 4 5 6 R.
Faculty2 6 3 1 0 2—14
19092 5 0 4 0 3—14
Faculty—Fleck, pitcher; Mertes, catcher.
1909—Brooks, pitcher; Hull, catcher.
After the game the teams had a swim in the pool at the gym, and then the Alumni



1911 Junior Prom

had their luncheon in the Mineralogy Laboratory, Guggenheim Hall, well seasoned with songs and yells, and followed by cigars, on Prexy, then the whole bunch marched down to Prexy's house and had more cigars.
The original plans were that the graduating class should lead the procession, but after marching around the lawn singing and yelling the Alumni decided they would lead the procession, and did so, singing on the way. While waiting at the head of the

stairs for the invited guests and faculty to dispose of their silk hats, we entertained the assembled audience with all the songs we could remember. We presume, to their, and certainly to our, enjoyment.

A detailed account of the commencement exercises is unnecessary here, as you have all been through similar affairs at least once. The commencement address was made by Dr. Slocum of Colorado College, and will be published in the next Quarterly.

For excellence in thesis work the E. G. Stoiber prize of \$150 was awarded to Edward J. Dittus and Reginald J. Bowman. Roy Smith was awarded the D. W. Brunton transit. It was announced that every graduate will receive a year's subscription to Mining Science.

CLASS OF 1911.

The degree of E. M. (Mining Engineer) was conferred upon.

Samuel J. Clausen, Jr.

Thesis: The preservation of mine timbers.

Thomas H. Garnett

and

John T. Galligan.

Thesis: A report on the Little Mattie Mine and Mill, Idaho Springs, Colo.

Samuel Rollins Brown, Jr.

Thesis: A report on the Gold Queen group Dolores Co., Colo.

Walter J. Mayer

and

Arthur N. Zwetow.

Thesis: A report on the Gilpin County Mining District, with special reference to the Silent King group of claims.

Walter William Barnett

and

Kenneth H. Matheson.

Thesis: A report on the Shafter Mine, Idaho Springs, Colo.

William Crawford Douglass

and

James Alfred Lannon.

Thesis: A report on the London Mine, Park County, Colo.

John Victor Harvey.

Thesis: Steam-coal mining in Iowa.

Otto Herres, Jr.,

and

Emory Miller Marshall.

Thesis: A geological survey of Loveland Mountain, Park County, Colo.

Frank William Lee, Jr.

Thesis: Mine timbering.

Charles Oscar Olsen.

Thesis: Comparative rates of drilling of various compressed air machines.

August William Schneider

and

Ralph Herbert Shaw.

Thesis: A topographical and geological survey of the South Mosquito Amphitheater and of London Mountain, Park County, Colo.

Gustave W. Voelzel.

Thesis: A report on the property of the Comstock Mines and Milling Co., Hancock, Colo., with plans for a 40-ton Nissen stamp and concentrating mill.

Roy Frank Smith.

Thesis: The geology and mining of Pennsylvania Mountain, Park County, Colo.

William Finkler Koch.

Thesis: A series of tests on explosives.

Arthur Lague May.

Thesis: The metallographic analysis of steel.

Philip Maurice McHugh.

Thesis: A new method of air agitation for cyanide solutions.

Hamilton Wallace Baker.

Thesis: The design of an aerial gravity tramway.

The degree of E. Met. (Metallurgical Engineer) was conferred upon

Sidney Blum

and

Robert Edward Snow.

Thesis: The treatment of vanadium ore.

Ralph Victor Thurston.

Thesis: The analysis and concentration of molybdenite ore.

Irving B. Williams.

Thesis: The treatment and disposal of Cobalt speiss.

Charles R. Wraith.

Thesis: Thermo-chemical study of a copper converter.

Karl Valentine Geib

and

Bert Merritt Laurence.

Thesis: Dry chlorination.

Frederick Engle.

Thesis: The acid number of uranium and vanadium ore.

Morris V. Andre, Jr.

Thesis: The relation of lead acetate to the cyanidation of silver sulphite ores.

Edward Julius Dittus

and

Reginald G. Bowman.

Thesis: The direct production of molybdenum steel in the electric furnace.

The degrees of E. M. and E. Met. were conferred upon

Wallace George Matteson.

Thesis: Mining.* The common features of the world's greatest silver mining districts. Metallurgical. The treatment and disposal of Cobalt Speiss.

After the exercises we "sampled Prexy's pink tea" at the Integral Club and found it "high grade."

The most of us remained or returned for the Junior prom., reinforced by a number who could not attend earlier in the day.

Everyone present enjoyed the day and can be depended upon to return next year if it is at all possible to do so.

The Alumni.

ALUMNI BANQUET AND MEETING, MAY 27, 1911.

Shortly after 7:30 p. m. forty-one members of the Alumni Association sat down to the banquet in the convention hall of the Albany Hotel. A little later three more members appeared upon the scene. Later in the evening another member, unable to attend in time for the banquet, came in to be present at the meeting.

The first hour was spent disposing of the various edibles and drinkables set before us, and in singing songs more or less in accompaniment with the music furnished by the Albany Orchestra. We all sang, or tried to sing, and thoroughly enjoyed ourselves.

During the banquet the President and Toastmaster, F. S. Titsworth, with the approval of the meeting, appointed George W. Schneider, L. B. Skinner and James H. Steele a committee of three to canvass the ballots cast for the new officers and the amendments to the constitution and by-laws. About as we arrived at the cigars they reported as follows:

For President—A. F. Hewitt, 126; A. R. Hodgson, 1; W. J. Hazard, 1; Andrew Weiss, 1; Fred C. Steinhauer, 1.

For Vice-President—Andrew Weiss, 126; Louis Cohen, 1.

For Secretary—F. M. Drescher, 129.

For Treasurer—Chas. N. Bell, 129; Geo. P. Moore, 1.

For Member of the Executive Committee—F. S. Titsworth, 128; A. R. Hodgson, 1; Louis Schafer, 1; Chas. H. McMahan, 1.

Majority for the amendment to Section 1, Article III. of the Constitution, 130.

Majority for the amendment to Section 5, Article III. of the by-laws, 130.

Majority for the amendment to Section 2, Article VII., of the by-laws, 130.

It was moved and seconded that the report be accepted as read, and that Hewitt, Weiss, Drescher, Bell and Titsworth be declared elected to the respective offices, and that the amendments be declared carried. Motion carried unanimously.

The toastmaster then made a few remarks, reviewing the important events of the past two years from the standpoint of the Association, notably the securing passage of a law that makes it mandatory upon the Governor to keep a graduate of the School on the Board of Trustees, the appointment of an Assistant Secretary at Golden, and the launching of the Alumni Magazine, that the magazine receipts had repaid all money advanced to start it, the election to determine the choice of the Alumni for the Alumni Trustee member, and the appointment by the Governor of the man so chosen, and an increase of nearly 150 members in the Association.

The toastmaster then read the following letters from Andrew Weiss:

DEPARTMENT OF THE INTERIOR, UNITED STATES RECLAMATION SERVICE.

Mitchell, Neb., May 25, 1911.

Mr. F. S. Titsworth,
President School of Mines Alumni Assn.,
Equitable Building, Denver, Colorado.

Dear Mr. Titsworth:

I enclose herewith a letter to the Alumni Association which I would thank you to read or have read to them at the meeting tonight. I regret most keenly my inability to be present at this meeting, but the conditions make it practically impossible for me to attend.

Anything that I may be able to do in the future to enhance the interests of our Association, I will be very glad indeed to do.

If you deem the letter of insufficient interest to be read or the opportunity should not present itself for such reading, it will, of course, not matter. I simply wanted to express the idea that although I was not present in person, I was with the Association in interest and sympathy.

Very sincerely,

ANDREW WEISS.

Mitchell, Neb., May 25, 1911.

To the President and Fellow Members, Colorado School of Mines Alumni Association.
Dear Fellow Graduates:

It is with a sense of keen regret and disappointment that I am writing these few lines of greeting to you. I had fully expected and hoped to be able to attend the annual banquet and reunion this year, and to meet many old graduates, classmates and friends, as well as to meet later graduates, and to do my share towards securing a closer bond of friendship between the graduates of the old school and those of later years. Circumstances are such, however, as to make it impracticable for me to attend, and for that reason I am sending these few lines to the president of our Association, with the request that he read or have them read to you and remind you all that many of those who are by force of conditions absent from this meeting tonight are, nevertheless, silent sympathizers with our organization and its aims.

I wish to take this opportunity of commenting upon our publication, The Colorado School of Mines Magazine. This publication has so grown in interest among the members of the Association that it deserves the most hearty support of every one of its members. The founders of this magazine, and particular its editor, deserves the gratitude of the entire Association. I believe I voice the opinion of many when I say that the columns of personals and letters from

various members of the alumni of all classes and opinions are most useful and interesting. It is my judgment that this magazine is doing more to bring about a feeling and spirit of friendly understanding and helpfulness among the graduates than any other move which has so far been made by the Association towards this end. It is understood that most of our graduates are busy men, and many are so burdened with professional and administrative duties as to find it difficult to set aside a sufficient time allowance to write short communications to this paper; but this is to remind you that we should each do our best and contribute our share towards making this publication one of constantly increasing interest and usefulness to the graduates from our school, and help one another by a candid expression of views on matters of technical or general interest.

In the March number of this magazine was a letter by Mr. M. C. Allen, '06, dated February 7, 1911, and directed to the Committee of Instruction of the C. S. M. Alumni Association. This letter should have been replied to by the Committee of Instruction of the C. S. M. Alumni Association, but this committee has not been in session since the time its report was rendered in January, and the various members of this committee are so widely scattered as to make it difficult to secure a gathering. Incidental to this letter, I wish to give my views on the points raised by Mr. Allen, and for the benefit of those who do not recall Mr. Allen's letter, the same is herewith quoted:

"Hailey, Idaho, Feb. 7, 1911.

"Committee of Instruction of the C. S. M. Alumni Association.
Gentlemen:

"The February number of the C. S. M. Magazine has been received and read. I was especially interested in the five and six-year course discussion, and would like to make the following suggestions:

"I have forgotten a very large part of the things I learned in school, and have often wished to review some of the subjects that interested me, such as mathematics, mechanics, and engineering subjects. I have no doubt that this has occurred to a good many of the rest of us.

"I should like to have an outline in considerable detail of the work we did in the recitation and lecture rooms, giving the items that are of importance, why they are of importance, and what their applications are. Text books used should be named and the articles of importance referred to by name and number.

"A five-year course is spoken of and deemed inadvisable. Why was it spoken of? Because there was so much work—more than could be crowded into a four-year course? Now some of the alumni would probably like to have such a course (post-graduate course, I mean), but for most of us it is impracticable.

"I believe it would meet with approval to have a course of further study outlined, so that those who did want to study further would have something for a guide and not have to read through a lot of irrelevant matter to find what was wanted. A man is not able to pick out what he wants, oftentimes, until he gets a good way beyond so he can look back, and, if a lot of stuff has to be waded through, he often loses sight of what he really wants most. Such an outline might increase the efficiency of his study.

"Yours truly,

"M. C. ALLEN, '06."

Mr. Allen doubtless voices the sentiment of a large number of our graduates, as well as the graduates from other schools. It is particularly difficult to review such subjects as Mathematics and Mechanics when one is engaged in the active duties of the profession, and particularly so in later years, as one must assume charge of constantly increasing responsibilities and administrative duties. These generally tend to drift one away from the purely technical lines of one's work. I believe I can speak for every member of our committee when I say that we should all be glad to outline such a post-graduate course of study, as suggested by Mr. Allen, for I must say that every member of this committee showed the most earnest and intense interest in its work and in the discussions which ripened into the report published in the January number of our magazine. It is my belief, however, to which belief others of our committee may not subscribe, that any attempt at outlining a post-graduate course of study for our alumni to follow after they leave the institution would probably result either in total failure or else in very indifferent success. This appears so to me for the reason that probably every one of our graduates meets different problems and conditions, and a course, which might fit one case peculiarly well, would probably be a very useless one for a majority of all the others to adopt. Mr. Allen is quite right when he speaks of the lot of stuff that has to be waded through, much of which is irrelevant matter, in our search for greater wisdom and efficiency. It is my belief, however, that this will always be so, and that it is the price we must pay for the advantages to be gained. I believe the engineer, who wishes to excel in his line, or at least wishes to become a useful member of his profession, should equip himself with the latest and best books which are published from time to time on the various branches of the work in which he is particularly interested. This, it is believed, is the practice followed by most engineers today. If, in addition to these books, he will subscribe to the leading technical magazines of his profession and give them as much time and study as he can possibly afford, he is certainly in a position to keep abreast of the times and hold his own with any

members of his profession. To do this, however, requires hard work, time and self-discipline. It is simply the old story that one must pay the price for what one gets. However, I did not intend to lecture, but merely to bring this subject up for consideration and discussion, as there will probably be other members of our committee present tonight, who may have thought over this subject and whose views are at least of equal importance.

In conclusion, I wish to say that anything which I may be able to do for any one of our number, whether he be a new graduate or one of the former administration of the school, will be done most cheerfully and to any extent that my abilities and opportunities permit. I judge from various expressions in our alumni paper that some of the younger graduates at least have a feeling that the older members of the Association feel a sort of aloofness from the younger members. This impression is entirely erroneous, and it is believed that through the medium of our magazine this feeling will be obliterated more completely than it could by any other means. If the magazine accomplish this purpose alone, it will accomplish an object well worth any effort it may cost, because there can be no strength to any organization except as its members work in unison towards aims which are worthy and lofty.

Your friend and fellow graduate,

ANDREW WEISS.

In response to the toast "Our Trustee," Fred C. Steinhauer thanked the Alumni for choosing him as their representative on the Board of Trustees, and promised to attend every meeting that it was at all possible for him to attend. He requested each and every member to feel free to call on him or write to him at any time about any matters pertaining to the School and that he would always do the best he knew how for the school. Whenever the Association decided on any school questions under discussion he would go down the line to the best of his ability in support of such a decision.

Mr. Guiterman sent word to the Alumni, through Mr. Steinhauer, that any time any member of the Alumni would like to talk to him about the affairs of the School, or had any suggestions to offer or complaints to make about the management or the faculty of the School that he would be glad to meet him and talk things over. Just to write Colorado School of Mines on a card and he would lay aside any business, no matter how important, in order to listen to him.

Mr. Bennett sent word to the same effect, and, as you all probably know, Mr. Bulkley is a loyal member of the Alumni Association.

A. F. Hewitt responded to "Our New President," and E. J. Dittus to "The Class of

1911," and their remarks were received with enthusiasm. (As the Assistant Secretary was unfortunately called out of the room to give an interview to a newspaper reporter during these responses, we cannot report them here.)

After these toasts, several other members responded to toasts, but as the remarks drifted into a discussion of the School affairs, the toastmaster resigned the chair in favor of the new President, A. F. Hewitt, who called the meeting to order.

The minutes of the last annual meeting were read and approved as read. The Treasurer was not ready with a complete report, but announced that there was approximately \$150 more in the treasury than when he took charge a year ago. As neither the Treasurer's nor the Secretary's reports were complete at the time, they will be published in the July number of the Magazine.

The chairman of the Athletic Committee was not present, and there was no Athletic Committee report at hand. The Committee on Instruction reported in January, and the report was published in the February Magazine, on pages 7, 8, 9 and 10. Because of its length, the reading of the report was dispensed with. The report was adopted as published.

M. D. Draper asked Mr. Steinhauer whether Prof. Patton had handed in his resignation or not, and was informed that he had not, and that it was probable that the Board would not have accepted it if he had. Chas. A. Gehrman, '86, made an address in which he urged every member of the Alumni to take an active part in the S. S. M. affairs and boost for the School at all times. The meeting at once proceeded to take an active interest in the affairs of the School, so active, in fact, that for nearly two hours the whole School, from the students to the Board of Trustees, was pretty thoroughly discussed, and numerous resolutions, amendments and amendments to amendments, and then substitutes were offered and strenuously argued pro and con. Practically every member present had at least a few remarks to make, some more than a few. Finally the following resolution was agreed upon and adopted by a large majority vote:

"Whereas, The Board of Trustees has appointed a President for the School of Mines for the ensuing year,

Now, Therefore, Be It Resolved, That the Association give the President so appointed its unqualified support during the term of his office."

It was then moved and seconded that the Association request Mr. Steinhauer to use his best efforts to have F. S. Titworth appointed as Mining Law Lecturer, with pay. Motion was carried, with only one dissenting vote. Mr. Titworth loudly objected to the "with pay" clause.

A motion that a vote of thanks be given the Assistant Secretary for the capable manner in which he had conducted the

Magazine was carried unanimously. The meeting then adjourned in time to catch the 12:30 cars.

The following members were present:

M. D. Draper, John Gross, R. M. Keeney, C. L. Colburn, W. S. Medell, L. B. Skinner, J. H. Steele, F. S. Titsworth, H. J. Wolf, E. B. Wood, H. C. Beeler, C. C. Parrish, T. W. Quayle, A. H. Roller, G. W. Voelzel, A. E. Anderson, C. C. Malmstrom, J. W. Johnson, W. W. Barnett, R. V. Thurston, Louis Cohen, J. E. Norman, J. S. Bradford, W. C. J. Rambo, C. L. Brown, Louis Schafer, C. W. Burgess, E. C. Brooks, F. M. Drescher, A. F. Hewitt, Geo. A. Kennedy, Fred C. Steinhauer, C. B. Hull, E. J. Dittus, C. G. Warfel, R. F. Smith, Otto Herres, Jr., Chas. A. Gehrman, Geo. W. Schneider, D. C. Kelso, A. R. Kenner, Wm. F. Hoch, J. M. Kleff, Tracy Bartholomew, and Orville Harrington.

PERSONALS.

'96.

Henry C. Beeler has moved his offices to 1004 First National Bank Building, Denver, Colo. He will devote the greater portion of his time to personal interests and Wyoming mineral matters.

'98.

Charles N. Stephens became the father of a nine-pound baby girl recently. He has two other little girls. Charlie always was a favorite with the girls.

'99.

Charles J. Adami, lately superintendent for the Federal Lead Company, Flat River, Mo., is now assistant general manager of the Doe Run Lead Company, Rivermines, Missouri.

Frank W. Royer of Mexico City, Mexico, has been in California on mining business. He was accompanied by his wife.

'02.

Prof. G. M. Butler made the address at the graduating exercises of the Idaho Springs High School on May 24.

Arthur H. Collbran and his wife are rejoicing in the birth of a son on May 24, at their home in Korea.

'03.

Walter A. Funk of Idaho Falls, Idaho, was a visitor in Golden a few weeks ago. He has been examining some mining property in Gilpin County, and if his report is satisfactory he may remain and take charge of the property.

'05.

The marriage of Robert Leroy Hallett and Miss Phoebe Louise James will take place June 10 at the Central Christian Church in Denver, and will be one of the social events of the season. After a wedding trip the couple will make their home in Humboldt, Arizona.

'06.

Albert J. Koerner and Miss Mabel Buckingham will be married in Denver some time in June. Mr. Koerner has been managing

his father's business interests in St. Louis for several years.

'07.

Paul A. Gow, who has been with the Anaconda Copper Mining Company of Butte, Mont., since graduation, was appointed city engineer of Butte on May 1. Mr. Gow has won considerable fame as a maker of models for use in mining and other technical schools. These models show the system of timbering employed in the great copper mines of Butte, and are in daily use in a number of leading colleges.

G. M. Ross has accepted a position with the El Tigre Mining Company, Yzabel, Sonora, Mexico.

Charles A. Filteau left San Jose de Gracia, Sinaloa, Mexico, recently because of the insurrectos. He is temporarily in Denver. Next month we will have an article or letter from him telling of the lively time they had getting back to the states.

William H. Friedhoff has been appointed on the force of mineral experts of the Department of the Interior. His first assignment is at Helena, Mont. The position is a responsible one, as the government usually accepts the reports of its experts before commencing suits against individuals or corporations for frauds in connection with filings on government land.

'08.

T. S. Harrison visited the school and assistant secretary about the last of April. He is located at Cody, Wyoming, and recently became the proud father of a baby boy.

William R. Chedsey, professor of mining, University of Idaho, is leaving Moscow, Idaho, to open an office in Denver, Colo.

'09.

Charles W. Burgess, manager of the Cal. Eagle Mining Company, has also accepted a position as manager of the S. V. & D. Mining Company, with office at Carthage, Mo.

John Hays Hammond left New York recently for London to represent the United States as special ambassador at the coronation.

The following members of 1909 were present at their class reunion and the alumni reunion, luncheon and banquet: Louis Schafer, E. B. Wood, E. C. Brooks, M. E. Bunker, Charles W. Burgess, C. T. Emrich, C. B. Hull, W. C. J. Rambo.

'10.

Samuel W. Laughlin was married to Miss Grace Hall at a very pretty wedding in Denver May 5. Miss Hall is the daughter of Rev. and Mrs. Ira B. Hall of Golden. After a trip through Colorado and part of Utah the young couple will be at home in Butte, Mont., where Mr. Laughlin has a responsible position.

H. G. Skavlem, who is with the Hollinger Mines at Aura Lake, Ontario, Canada, lost all his personal effects in a forest fire that recently destroyed much timber and mining property in the Porcupine District. The Hollinger Mines will soon be going again, though the top works were destroyed.

H. J. Hilton has been sick with appendicitis for six weeks, but is up and around again. He is located at Vernal, Utah.

Sam M. Soupcoff, late with the Anaconda Mining Company, Butte, Mont., paid Golden and the School a short visit recently. He is planning to accept a position in Alaska, and will visit his old home in Pittsburg first. He has promised to write an article on the hard fight made against fire in the big stopes of Butte some time ago.

Robert M. Keeney, fellow in metallurgy, has been awarded the Andrew Carnegie scholarship of \$500 for the coming year. The subject of his research work is "The production of steels and ferroalloys directly from ores in the electric furnace." This was the subject of his graduating thesis in 1910. The work done was of such a high character that it appealed strongly to the members of the Institute, who at once awarded Keeney the largest possible scholarship at their disposal. The Carnegie scholarship fund of \$64,000 was given to the Iron and Steel Institute of Great Britain in 1902 by Andrew Carnegie, who was then president of the Institute. The object of the fund is to promote the metallurgy of iron and steel by providing means for investigation by scientists and by men advanced in practical iron and steel work. The scholarships are intended merely to defray the actual expenses of research, and are open to any scientific investigator in any country. From three to six scholarships are awarded annually by the Institute, which are of values of \$100 to \$500. Additional grants are often made to the holder of a scholarship if the work done in the first year warrants. The scholarships are open to the world, and a large number of applicants are received annually. A report on the work performed is required one year after the award is made. The men presenting the best report, in the opinion of the council, is awarded the Andrew Carnegie gold medal at the annual meeting in May of each year. Silver medals may be awarded to the other holders of the scholarships.

COMMUNICATIONS.

The Suan Mine, Pyeng Yang, Korea,
April 10, 1911.

Mr. Orville Harrington,
Asst. Sec. C. M. S. Alumni Assn.,
Golden, Colorado, U. S. A.

Dear Sir:—

Herewith enclosed please find cheque for \$5.00, covering a four-year subscription to the School of Mines Magazine, addressed to me as above.

Several years ago I ran across Maynard, '96, up in the interior of the Malay Peninsula, but since then I have not had the pleasure of running across any of the graduates out in the Far East. To all who should wander out in this direction, I extend a hearty welcome. Korea was placed

on the map by the Japanese, and it has a great mining future.

Emrich, up in Russia, is probably my nearest neighbor, and please note I do not share his views toward the Alumni Association. I would advise Emrich to change his brand of "vodka."

Yours faithfully,

A. H. COLBRAN.

CERRO DE PASCO MINING COMPANY,

La Fundicion, Peru, April 4, 1911.

Mr. Orville Harrington,
Asst. Sec'y. Alumni Association,

Dear Sir: Enclosed please find the Capability Exchange blank, which was sent to me some time ago, now completely filled out. I admire the spirit with which you are following up the first attacks made by Mr. Lonergan, and I think such spirit deserves much more prompt and full recognition than it has so far generally received. Although a good way from the "base of operations," I am always interested in the suggestions and discussions I read in the paper, and at such a time as I think my ideas on any subject might forward a good cause, you may count on having them.

Regarding my subscription for the Magazine, I am forced to get it to you through some more or less roundabout medium. A draft on New York for less than \$5.00 I cannot get, I have no personal account in the States, and the currency of Peru is all in silver or gold. But with all these difficulties I shall get you my subscription for two years at an early date.

That letter from Benjovsky, Schafer and Brooks, '09, sounded mighty good, and makes a fellow glad of his "numerals." But then, isn't it really to be expected that those who have been graduated only for two or three years should take hold quicker and easier than the older Alumni, for isn't their interest fresher? Let the younger members of the Association feel that the responsibility is mostly theirs, and all do their share, which is not a great deal, accordingly. I think the emphasis all the way through this work should be on the "all," for with only a few really "doing things," the Alumni Association, as a strong and influential unit, must fail. And our purpose and watchword must be "Success!"

Let me say, that this making a well-organized and helpful body out of an ordinary Alumni Association is no new and untried thing. The Alumni of a School of Mines, one of our foremost rivals, is making it a working success today. Can't we put ours on the same footing, and get in the race with our rivals for some of "the good things" of the mining profession?"

Hoping to be able to supply the Magazine with some notes of interest of this district, for one of the Fall numbers, I remain,

Very sincerely yours,

B. L. SACKETT, '09.

Athletic News.

Harold C. Price, Sporting Editor.

The baseball season is over, and Colorado College is again champion. The situation, as far as we are concerned, is rather complicated. We have played five conference games, winning two of them. The standing of the conference is as follows:

	Won.	Lost.
Colorado College	4	1
Fort Collins	3	3
Boulder	3	3
Mines	2	3
Denver University	2	4

Boulder and Denver both played their full schedule, but owing to bad weather, we lost the opportunity of playing three more scheduled games; two with Colorado College and one with Fort Collins. This was unfortunate, as there is little or no doubt but that we would have beaten the Farmers, and we had an even chance with Colorado College. Had these games been played, and won, it can be seen that Mines would have been tied for first place with the Tigers. But it is all over now, so instead of talking of what might have happened, we had better look into the future, which is much brighter than the past.

For the first time in four years we will be able to start the season with a veteran team. Of the ten men who received "Ms", only two are lost, Rockwood and Andre. This leaves the batteries, the entire infield and two outfielders still on the job. With this bunch there is no excuse for the championship of 1912 not coming to Golden. We have got to win, and we are going to do it.

"PJ" Warren has been elected captain, and a better man could not have been selected. Although he has not had the experience some of the other members of the team have had, he has got the "hep," and that is what the team needs more than anything else. With Warren at the head and ex-Captain Watson to help him, there is no doubt but that the 1912 team will be one of the scrappiest baseball teams Mines has ever had.

MINES SPIRIT TOO MUCH FOR BOULDER.

It was the greatest finish seen in Golden for many a day. The seventh inning opened with the score 2 to 0 in favor of Boulder, and Lavington pitching like a fiend. Somebody in the grandstand shouted as the Mines came to the bat, "Well, it's time to start something!" And then it started. Johnny Davis, first man up, got in on an error; Warren singled and filled the cushions when the Boulder shortstop made a miscue. With one down, Turner smashed a double to right and the score was tied. Then Rockwood singled and "Litch" scored. Turner brought

in the last run on Price's safety to left. Boulder proceeded to get busy right away then, and, in the next inning loaded the bases with only one down, but Harry Wilson got sore at that and struck out the next two. The rest of the game need not be mentioned, except for the fact that in the first inning Hall scored Boulder's first run on a home-run drive over the left field fence.

MINES VS. BOULDER, AT GOLDEN.

The score:

	BOULDER.				
	R.	1B.	P.O.	A.	E.
Griffen, 2b.	1	1	3	1	1
Hall, lf.	1	2	0	1	0
McNeil, 1b.	0	0	9	0	0
Cowell, ss.	0	1	1	3	2
Briggs, rf.	0	1	0	0	0
Kemp, cf.	0	2	1	0	0
Fawcett, 3b.	0	1	2	1	0
Lavington, p.	0	0	0	1	1
Gartland, p.	0	0	0	1	0
Bonner, c.	0	0	8	4	0
*O'Brien	0	0	0	0	0
Totals	2	8	24	12	4

	MINES.				
	R.	1B.	P.O.	A.	E.
Davis, 2b.	1	0	2	0	0
Warren, cf.	1	1	2	0	0
Litchfield, 1b.	1	13	0	0	0
Watson, 3b.	0	1	0	4	1
Turner, c.	1	2	8	0	0
Rockwood, rf.	0	1	0	0	1
McGuire, ss.	0	0	0	5	0
Price, lf.	0	1	2	0	0
Wilson, p.	0	0	0	5	0
Totals	4	7	27	14	2

Score by innings:

	1	2	3	4	5	6	7	8	9	R.H.E.
Boulder	1	0	0	1	0	0	0	0	0	—* * 2
Mines	0	0	0	0	0	0	4	0	0	*—* * 4

Two-Base Hits—Turner (2), Hall; Home Runs—Hall. Base on balls—Off Wilson, 2. Struck out—Wilson, 8; Lavington, 5. Hit by Pitcher—By Gartland, 1. Umpire, Means.

D. U., 10; MINES, 3.

The bitterest disappointment of the year was ours when D. U. walloped us by the above score. Chucked full of confidence after the Boulder game, our men went to Denver, only to play the Ministers to a standstill for seven innings, and then blow up. That is all that need be said. The less the better:

The score:

	1	2	3	4	5	6	7	8	9	R.
Mines	2	0	0	0	1	0	0	0	0	— 3
D. U.	0	0	1	2	0	0	7	0	0	*—10

Batteries—Mines: Wilson and Turner. D. U., Davis and Tike.

REVENGE ON SACRED HEART.

One sure thing can be said about this year's team. It was consistent in the fact that it always furnished a surprise. After being beaten by D. U., no one expected a victory over Sacred Heart, a team which had beaten us 8 to 3 earlier in the season; but nevertheless, such was the case, and the score was exactly the same, although reversed. Wilson again pitched a great game, fanning out fourteen men.

The following baseball men were awarded their monogram by the Athletic Board: Captain Watson, Davis, Warren, Rockwood, Andre, McGuire, Price, Litchfield, Wilson, Turner, and Manager Thomas.

TRACK.

The track results this season have been rather disappointing. The first meet was with Boulder, and resulted in their favor, by

a score of 83 to 29. The only Miners to win first place were Mertes in the discus and Young in the shot.

The Aggie meet came our way, as was expected, although we hardly expected to win the Conference meet, we did expect to make more than five points. This we would have done, without a doubt, had the weight men been up to their usual form. As it was, "Jack" Myers was the only point-getter, when he won the shot put.

The School of Mines seniors, on the final inspection trip, stopped in Glenwood Springs long enough to clean up the Glenwood baseball team by a score of 11 to 5. The score was even until the eighth inning, when the Miners bunched their hits and brought in six runs. "Ham" Baker got away with three long hits. Andre and Douglas formed the Mines battery.

College Notes.

MISCELLANEOUS.

Professor and Mrs. Robert Otis are the happy parents of an 11-pound boy.

Miss Mabel Schrum, librarian, left for a three months' trip abroad about the first of May, in company with Mrs. Paul Meyer.

Rapid progress is being made in the completion of the School of Mines metallurgical plant. The roof is finished, and the cement walls and floors are now being placed.

Professor Frank H. Cronin tendered his resignation as professor of mechanical engineering at the School of Mines early in May, the resignation to take effect at the close of the school year.

JUNIOR PROM.

The "Junior Prom" proved the most popular social event of the year in spite of the fact that the two lower classes were not present. About a hundred and twenty-five couple, including many of the Alumni and friends of the school, thoroughly enjoyed the evening. Dancing was the main feature, although the delightful supper came in as a pleasing intermission between the ninth and tenth dances. Lohmann's music, the decorations, and programs were all well up to the standard.

SOPHOMORE NOTES.

Adolph Bregman.

Since the last issue of the Magazine nothing of importance has occurred among the

Sophomores, except the finals—and they were important. With a vengeance. Now that they are over, however, we are all "Mines Surveyors" and roam the hillsides surveying the land and the Denver folks who come up to see the town. There were no interclass games, so we did not have a chance to win another championship, but—"nuff sed."

And now we're JUNIORS!

FRESHMAN NOTES.

Tsung Te Kao.

There are different kinds of accomplishments which are considered as great achievements by different persons. The great achievement, for a warrior, is to fight with a bold, merciless and terrible rebel and win the battle; for a philosopher, to study natural truths; for a scientist, to discover some new knowledge and invent some new machinery. But for a lover, the great achievement is to gain the affection of his sweetheart. To him, the lady's affection is worth more than anything else. When he meets the lady whom he considers the queen of love and beauty, he is charmed by the sweet voice, the beautiful features, and the matchless eyes. He tries his best to woo her, but his heart is trembling with the fear that his proposal may be rejected. His mind is full of imaginations. His soliloquy runs thus:

"She is the most beautiful mortal mixture of earth's mold. Her voice is sweet. Her heart is true. She is attractive, and I am attracted." Though he may be a heroic and dauntless knight, he is afraid that she may disapprove the proposal by saying:

"He may have my life, my blood, but not my hand. I would never marry one I can not love."

He may be a noble and a wealthy prince, but he is afraid. "God made him; therefore, let him pass for a man." After all, if he is successful in the engagement, you may imagine how proud he is, when he hears, "I love you! I am half yourself." The bird is in the hand. The gold apple is obtained. The besieged city is taken. The Jason has won the fleece. The victory falls on him.

We are glad to say that this general statement is found true to a friend of ours, T. H. M. Crampton. His marriage took place some weeks ago. One morning in the chemistry class, Professor Fleck announced that the class of 1914 congratulated Mr. Crampton for his happy marriage. The congratulation was accepted by Mr. Crampton with a few grateful expressions. We are, indeed, proud of that, the victor is one of the flowers of Freshmen.

The clean-up day of our school occurred on the 12th inst. Owing to the pressure of the school work in the different classes, it was thought that it was impossible to have a holiday this year. The Freshmen regret to miss the jolly time in painting M on the Mount Zion.

BOARD OF TRUSTEES.

New School of Mines Trustees Appointed.

One of the last acts of the late legislature was the confirmation of the appointment by Governor Shafroth of William J. Bennett, Frederick Steinhauser and Franklin Guiterman as members of the Board of Trustees of the School of Mines. These gentlemen take the places made vacant by the expiration of terms of Dr. J. P. Kelly, Joseph Jaffa and Wm. Lewis.

Mr. Steinhauser is a graduate of the institution, class of 1899, and his appointment was strongly urged by the Alumni Association. A nice feature of this appointment is that Mr. Steinhauser takes a place on the Board of which his father was a member for twenty years.

The appointment of Wm. Bennett, of Golden, comes as a recognition of a man who is familiar through actual experience with all phases of mining. He was for years engaged in mining in Sagauche County, and is a shrewd business man as well.

Franklin Guiterman is a man away up in mining, smelting and metallurgy, being now general manager for the American Smelting and Refining Company.

The other members of the Board are Captain James T. Smith, who has been on the Board ever since the institution was founded, and Frank Bulkley.

At the meeting of the new Board of Trustees of the School of Mines Frank Bulkley was chosen President of the Board for the ensuing term. Captain James T. Smith, who

has been on the Board since the founding of the institution, was made Secretary, and Harry M. Rubey Treasurer.

Before adjourning, the Board adopted the following resolution:

"Resolved: In parting with the services of Messrs. John P. Kelly, Joseph S. Jaffa and William B. Lewis, after continuous terms of eight years, the Board of Trustees of the Colorado School of Mines hereby records its appreciation of their intelligent devotion to the duties incumbent upon the directors of a great technical institution, which, during their term of service, achieved the purpose of its founders and special friends in reaching the highest position in its class at home or abroad, not only in the scope and excellence of its course of study, but in the standing of its graduates and in the number of students enrolled.

"During the period under notice gifts to the value of \$200,000 have been received, receipts from students and kindred sources of income developed by the Board of Trustees have totaled \$349,979, while \$882,010 has been received from State taxes and special appropriations. This grand total of \$1,431,989 has been received, expended and fully accounted for at a total cost of less than two-fifths of 1 per cent. on the dollar, while the permanent property of the School, as attested by the official inventories, has risen from \$245,770 in 1900 to \$723,841 in 1910.

"In giving way to your successors on the Board of Trustees you retire with the satisfaction of knowing that you were identified with the management of the Colorado School of Mines in the period of its most remarkable progress and that this progress stands without a rival when comparison is made with high-class technical institutions in America or Europe."

At a special meeting of the Board of Trustees, held Thursday, May 25, Dr. Victor C. Alderson was re-elected as President of the institution for the ensuing year, and at an adjourned meeting, held on Monday, May 29, the resignations of A. J. Hoskins, professor of mining; A. C. Smith, assistant professor of mining; and C. E. Smith, assistant professor of geology and mineralogy, were accepted.

The session of the Board on Monday was a very strenuous one, lasting more than ten hours, without any recess for lunch or dinner. Each and every member of the faculty was called before the Board for a personal interview, and as a result it is probable that any misunderstandings that may have existed in the past are now cleared away, and that all School affairs will run smoothly the next year.

Below is a list of the faculty as re-elected for the ensuing year. The notable changes are the promotions—Otis, from assistant professor to professor; Hawley, from instructor to assistant professor; Keeney, from fellow to instructor; Fischer, from fellow to instructor, and Haldane and Butler,

to associate professorships, and F. S. Titsworth was selected as mining law lecturer, in place of Joseph S. Jaffa.

FACULTY 1911-12.

Horace B. Patton,
Professor of Geology and Mineralogy.
Herman Fleck,
Professor of Chemistry.
F. W. Traphagen,
Professor of Metallurgy.
Charles R. Burger,
Professor of Mathematics.
William F. Allison,
Professor of Civil Engineering.
L. F. Miller,
Professor of Physics.
William J. Hazard,
Professor of Electrical Engineering.
R. B. Otis,
Professor of Mechanical Engineering.
William G. Haldane,
Associate Professor of Metallurgy.
G. Montague Butler,
Associate Professor of Geology and Mineralogy.
Charles D. Test,
Assistant Professor of Analytical Chemistry.
John C. Bailar,
Assistant Professor of Qualitative Analysis.
G. E. F. Sherwood,
Assistant Professor of Mathematics.
Ransom S. Hawley,
Assistant Professor of Mechanical Engineering.
William S. Medell,
Instructor in Chemistry.
Harry M. Showman,
Instructor in Mathematics.
Robert M. Keeney,
Instructor in Metallurgy.
Siegfried Fischer,
Instructor in Physics.
F. S. Titsworth,
Lecturer in Mining Law.
A. T. Mertes,
Fellow in Chemistry.
C. A. Rockwood,
Fellow in Chemistry.
C. D. Heaton,
Fellow in Geology.

He was an undersized, wiry little Irishman—so diminutive that the boss of the stevedore gang laughed when he applied for a job at the dock where they were jamming heavy freight into a huge tramp-steamer.

"We want men in this game, not boys!" was the dismissal that accompanied the laugh.

But Mike was persistent. He hung around until the foreman gave him a job handling light merchandise crates. This work he accomplished with such contemptuous ease that he was gradually given heavier stuff to handle, until he was hauling the very largest pieces.

He was in the middle of the gangplank, with a small anvil under each brawny arm, when the plank broke and precipitated him into the river. With a splash, he vanished from sight.

"T'row me a rope!" he spluttered, as he came up, spitting the water from his mouth. Then he went under again.

"T'row me a rope!" he spluttered, as he came up for the second time. Then once more the river closed over him.

When he bobbed up for the third time, they saw that he was treading water vigorously. He looked around for the rope and belatedly:

"Av wan av ye spalpeens don't t'row me a rope, I'll let go these bits av iron and come up and line the tar out of yez!"

THE MODERN HAT.

My bonnet spreads over the ocean,
My bonnet spreads over the sea,
For a bonnet that spreads over the sidewalk,
Is not half enough bonnet for me.

Mr. and Mrs. Jones were at a loss how to have baby Davy's birth recorded. Davy had been born at sea shortly after leaving Canton. The clerk obligingly entered it as follows:

"David Jones—born at Canton while his parents were temporarily at sea."

A man who wastes his time bragging about his ancestors isn't going to give his descendants much chance to brag of theirs.

EDUCATION.—What a man gets in return for alimony.

Some men would rather sleep an hour later than wake up and find themselves famous.

The man of the house was looking for his umbrella and, not finding it, asked the members of the family if they had used it.

"I think sister's beau took it last night," said Harry.

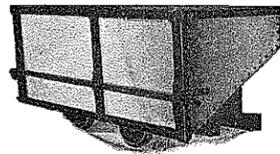
"Why do you think so, my son?"
"'Cause, when I was in the hall last night, I heard him say to sister: 'I believe I'll just steal one.'"

"Put yourself in his place" may be a good rule, provided it is not a tight place.

The dairy maid pensively milked the goat, and parting, she paused to mutter,
"I wish you brute, you would turn to milk!"
And the animal turned to butter.

Diagnosed.

"What some men manages to mistake for a clear conscience," said Uncle Eben, "is merely loss of memory."—Washington Star.



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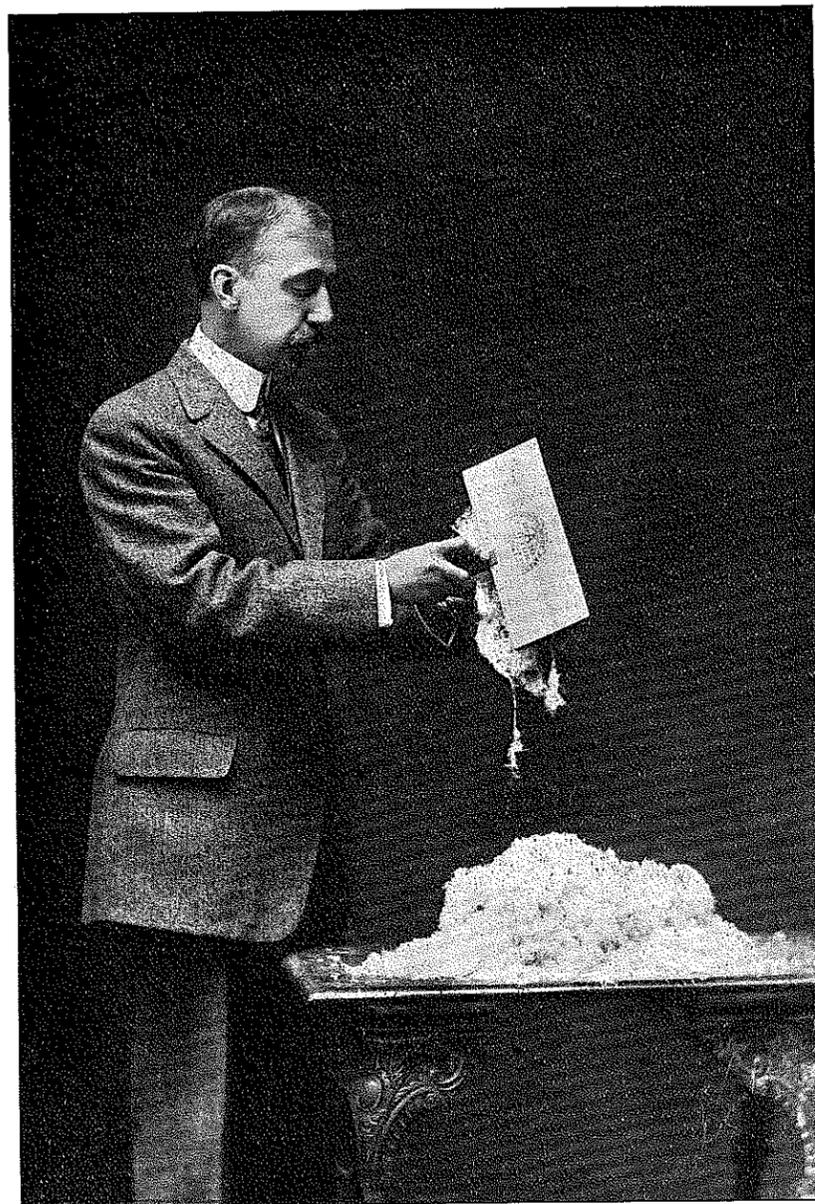
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HENRY C. BEELER, '96.

Showing the fiberized and carded chrysotile and the manner of using the hand cards.
Note the fluffy, flosslike condition of the fiber shown.

The COLORADO SCHOOL OF MINES MAGAZINE

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No. 10

Asbestos Deposits of Casper Mountain, Wyo.

By Henry C. Beeler, '96*.

One of the most remarkable facts in the economic development of the West, is that the pioneers in their endeavor to find and to control the best commercial opportunities of the new country, frequently passed by many things that would have been even more gainful than the matter to which they devoted their time and energies.

The cattlemen and flock masters of Wyoming have become wealthy from their herds and flocks. The grasses of Wyoming have made more fortunes than any other resources in that state, and the grazing industries are still the most important bases of Wyoming's wealth.

During the writer's experience, as State Geologist of Wyoming, for some eight years, there was scarcely a stockman who did not have some particular mineral deposit on his range "spotted" for a future investigation, and it is a remarkable fact that some of the wealthiest and most prominent men of the state have grazed their stock back and forth for many years unheeding over the identical asbestos deposits of the state, with which this paper has to deal.

The first mention of the asbestos of Wyoming to the writer was when an old stockman told him about the ground-hogs and prairie dogs having scratched up a lot of the fiber, acting as a sort of "natural fiberizer," leaving the cotton-like product to blow around over the adjacent ground.

The Casper Mountain asbestos deposits have been known as a matter of scientific interest for nearly 35 years. Samples from this region, in fact, from the Lower Smith Creek property of the International Asbestos Mill & Power Co., were awarded a diploma at the World's Fair in Chicago in 1893, but until the last three or four years but little attention was paid to the deposits as a commercial reality. The old cry of "too far from transportation and market," so familiar to all of us, has kept capital out of the field.

* Paper read before the Colorado Scientific Society.

Situation.

If one consults the map of Wyoming, Natrona County is noted as nearly the central part of the state. Casper, the county seat, is shown at the east central part of the county, the meeting point of the Burlington Route and the Chicago & Northwestern Railroad, the two principal railroads of the region, and the asbestos deposits lie immediately south and southeast of this point.

The low range of mountains locally known as Casper and Muddy Mountains, and noted on the maps as the "Casper Range," just south of the town of Casper, are a part of the front range of the Rocky Mountains, variously known as the Laramie Mountains or Laramie Hills, or in earlier days the "Black Hills of Wyoming." This range extends from the Wyoming-Colorado line northerly to Laramie Peak, whence the range turns almost abruptly and runs westerly to beyond the canon of the North Platte River, west of Casper Mountain.

Geology.

These ranges consist principally of a core of granite, flanked on either side by the carboniferous limestones and successive sedimentary formations which dip away from the main granite core at varying angle, and which present the usual varied geological conditions common to many of the Rocky Mountain uplifts of this extent. The sedimentaries flatten out into the plains and plateau regions on all sides, forming the great grazing lands which have made Wyoming famous.

The granite is usually of the red feldspathic variety, but an occasional area of white or gray granite is noted and the granite is cut in turn by dikes of schists, diorite and gneiss, presenting the usual contact and mineralized area conditions of these granite exposures.

The general geology in the vicinity of the asbestos deposits may be briefly described as eroded anticlines in which the deep-seated metamorphic rocks come to the surface and