

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

Vol. I.

GOLDEN, COLO., JULY, 1911.

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

are partly covered and bounded by synclines of the sedimentary rocks before noted. These sedimentaries have been deposited since the asbestos was formed, as is amply shown by the serpentine containing asbestos dipping under the sedimentary rocks at the eastern end of Casper Mountain, as well as by less abrupt changes in other parts of the area.

Asbestos occurs here in two distinct areas, the first discovered being that on Casper Mountain, showing a distinct east and west trend, and the Smith Creek locality, some eight or ten miles southeast, where the trend of the deposit is northwest and southeast.

Mr. J. S. Diller, of the United States Geological Survey,* estimates the Casper Mountain area at approximately four and one-half square miles, the Smith Creek area at near seven square miles and states that both these areas are characterized by the same rocks, of which the serpentine, diorite and granite are most important.

Mr. Diller defines the rocks of the asbestos areas as hornblende, schist, diorite, granite and serpentine, stating that the hornblende schist is a well-defined medium-grained schist in which the hornblende is somewhat more abundant than the altered feldspar and quartz. In these areas the granite is the principal rock, as described for the rest of the Laramie range, but in the asbestos areas, especially in the west slope of the Lower Smith Creek deposit and the second hill, Upper Smith Creek, these granites are noted as appearing also in large dikes and small intrusions into the serpentine mass shown at these points.

The serpentine noted in these asbestos areas occurs in huge dikes or belts, extending as before noted and is the usual bluish-green serpentine, and is here much crushed and sheared.

To again quote Mr. Diller, who has made an exhaustive study of this region, the serpentine where examined contains no remnants of the original rock from which it was derived. Its microscopical structure, however, clearly indicates that the original rock was composed almost wholly of olivine. It was not only peridotite but practically a dunite. The rocks of the asbestos area, ranging from granite to peridotite with a number of intermediate forms, resulted apparently from the differentiation of a single magna of which the asbestos is one of the final products.

Asbestos Minerals.

For the benefit of those of us whose textbooks are matters of years past, the following list of asbestos minerals is included as a reminder of the various forms covered by this general name.

The name asbestos, as commercially used at the present time, embraces three minerals with a number of subdivisions, having in common a fibrous structure and possessing more or less fire and acid-proof properties.

* Paper read before the Canadian Mining Institute, Quebec, 1911.

These minerals are enumerated in the following table:

I. The Anthophyllite group. Chemical composition (Mg, Fe) SiO_3 .

II. The Amphibole or Hornblende group. Chemical composition RSiO_3 ; usually associated with oxide of iron and manganese, and in a general way analogous to the pyroxenes; sodium and potassium are also present:

- a. Tremolite.
- b. Actinolite.
- c. Hornblende asbestos, hydrated (Italian asbestos).

d. Mountain leather, mountain wood and cork.

e. Crocokolite (blue or African asbestos, from West Griqualand).

III. Serpentine group $3\text{MgO}, 2\text{SiO}_2, 2\text{H}_2\text{O}$, or hydrated silicate of magnesia.

- a. Picrolite; found in Canadian mines.
- b. Chrysotile-asbestos, as found in Canadian mines and Wyoming.
- c. Talc.

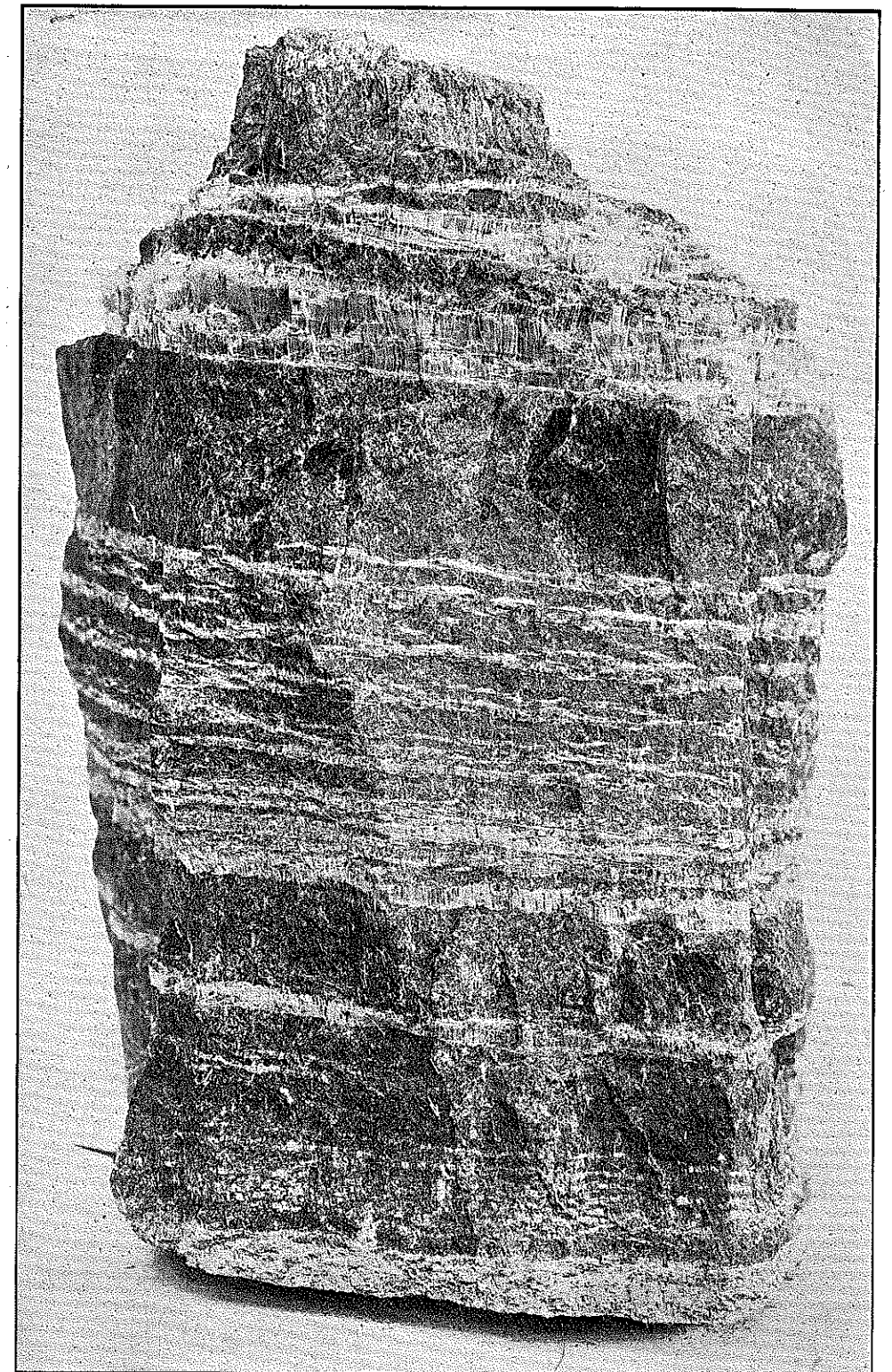
In external appearance, and in chemical composition, these minerals are much alike; indeed so much so, that when the crystals occur in long, slender prisms, or in radiating masses, the mineral is called actinolite; but when found in long, slender, flexible fibres easily separable, it is named asbestos. The difference between good and bad asbestos can be at once perceived by subjecting the fibres or long, slender crystals to tearing, twisting, and bending between the fingers. The good asbestos, applicable to the finer purposes of manufacture, will give up silky threads of great elasticity, and amenable to the various spinning processes; while bad asbestos will split up into harsh and sometimes brittle fibres, occasionally breaking up when rubbed between the fingers.

The heat-resisting property of both of these varieties of asbestos is approximately the same; so that when this characteristic of the asbestos is the only quality desired, the amphibole variety is found to be equally as satisfactory as the chrysotile; but whenever strength of fibre as well as non-conductivity of heat is desired, the chrysotile variety is the only one that can be used to advantage. Chemically the two species are much alike; chrysotile-asbestos is a hydrous silicate of magnesia, while the amphibole varieties are all either silicates of lime and magnesia, or compounds of silica with an earthy base-part of them hydrated. A special feature to be noted is that none of the anhydrous varieties have much of the unctuous feel which is so common a characteristic of the serpentine species.

Asbestos Fibre Structure.

Mr. Cirkel gives the results of a number of investigations recently made, comparing asbestos fibres with the organic fibre which forms a very interesting part of his recent work. Mr. Cirkel's conclusions follow:

"The result of the microscopical investigations so far conducted with fibres from different parts of the world, may be summarized in the following points:



Specimen of asbestos rock showing the many veinlets of chrysotile and the ribbon structure so common in these deposits.

1. The structure of asbestos fibre outwardly is almost identical with organic fibres, namely, that each apparently single fibre is composed of numerous, exceedingly fine filaments.

2. The difficulty of spinning asbestos fibre lies in the fact that, unlike silk, cotton, or wool, no imbrications or teeth-like obstructions are in evidence on the surface on any asbestos fibre whatsoever.

3. The variations in outward structure of the fibres examined are not strong enough to form a basis of reliable differentiation. One fact, however, seems to stand out, and that is, the glassy, or metallic, rod-like appearance of many asbestos fibres under high microscopic powers—with the exception of those from Thetford-Black Lake, Canada, and Russia."

The following comparative table as to the diameters of the smallest obtainable fibres reported by Mr. Cirkel may be of interest:

Locality	Smallest Diameter Millimetres	Number of Fibres per Lineal Inch
Canada—		
Thetford	0.001	25,000
Black Lake	0.001	25,000
Broughton	0.0015	16,650
Templeton	0.0015	16,605
St. Andrien	0.002	12,500
Carded asbestos.....	0.001	25,000
United States—		
Grand Canon, Arizona....	0.00075	33,325
Casper Mountain, Wyo....	0.00075	33,325

It may be noted in the above table that the Wyoming and Grand Canon fibres show more than twice the number of fibres per lineal inch as some of the Canadian varieties and about 25 per cent more than the highest given for Canadian fiber.

Further experiments along these lines will be awaited with interest.

Occurrences.

The Wyoming asbestos occurs in a practically infinite number of fissures and shear zones throughout the serpentine mass, these zones being from 5 to 20 and 50 feet in width, and in the opinion of the writer, based on an intimate personal acquaintance with deposit, zones of even greater width will be opened up. The veins of asbestos, as may be noted in the accompanying illustrations, vary from a hair line to four and five inches in width, the greater percentage, however, being from a quarter of an inch to one-half inch or less. In wider fissure one frequently notes a break or parting extending irregularly through the fibre, as is usually the case in all deposits of this nature.

Veinlets occur at all angles and in almost every possible relation with each other, some zones presenting a remarkable regularity, and running perfectly parallel with each other for many feet, then suddenly changing to a criss-cross appearance more like a tangled skein than anything else, and as suddenly emerging again into apparently regular veins.

Although the cross fibres of chrysotile are always in serpentine, the localities in which

they are most abundant are generally near the contact between serpentine and granite, and the larger veins are for the most part approximately parallel to the contact as though the granite were a factor in their development.

In these deposits there is practically no overburden to be removed, the serpentine usually outcropping or covered only by a few inches of light soil.

Color.

The color of the asbestos in the Casper Mountain region is usually a pale green, depending on a number of mineralogical conditions, and varies from a colorless condition to a yellowish bronze, but it is noted that where the fibre is produced from the deeper workings, it exhibits its pale greenish color with remarkable regularity.

Classification.

The writer agrees with Mr. Diller that the asbestos of the Casper Mountain region is almost wholly chrysotile, but goes further in stating that it also has that peculiar spinning quality and strength essential for a high-grade commercial fibre in almost all of the fibre encountered.

The writer's personal observation in these deposits notes that there is a small amount or rather a limited exposure of amphibole schists near this locality and occasionally fibrous specimens from these exposures have been sent out as coming from the Casper Mountain asbestos fields, but are certainly entirely separate and distinct from the chrysotile deposits which are being considered. In Wyoming in common with many other states of the Rocky Mountain regions, one frequently encounters these isolated exposures of the fibrous amphibolites, some of which, as has been noted, exhibit the same structure, color and general appearance as the real asbestos, but which instantly show their true character upon handling, as they usually go to powder when an attempt to fiberize them is made, or if they possess a slight ductility, the true character is shown upon any attempt to card the specimen.

Slip Fibre.

As may be expected in a region where there have been a number of disturbances, there is much slip fibre in this locality, and, of course, some of it is brittle, but this latter is readily distinguished from the commercially valuable fibre. It may be also noted from the examples exhibited that many of these asbestos veins and the fibre are much crumpled and in some cases the cross fibre appears to pass into this slip fibre.

Even a cursory examination of this field will show that the serpentines have evidently been much disturbed since the process of formation of the fibre was begun, and it is also quite possible that much slip fibre is younger than the enclosed or adjacent cross fibre. Some of the fibre now showing the characteristics of slip fibre was

evidently formed as a straight cross fibre and the present slip condition is due to slight movements in the enclosing serpentine since its formation, resulting in the distortion of the fibre crystals and crumpling them up in the many odd forms of arrangements which may be noted.

Length.

The actual average working length of the Wyoming fibre is a matter which cannot now be authoritatively given, owing to the limited production yet made, and in this connection one may only note the opinion of those who are familiar with the active operation of the Canadian fields. In the opinion of these gentlemen (who are disinterested), the Wyoming deposits as exposed show a greater average length of fibre than the similar Canadian exposures.

The average length of the Wyoming fibre in the crude grades ranges from half inch to an inch and a half, averaging about one inch in length. In addition to this there is a great amount, (the percentage of which is yet undetermined), which runs from two to four inches in length, unbroken fibre of two inches or more in length being not at all uncommon.

As is frequently the case in every mineral deposit, there occur some exceptional products and the writer has personally measured unbroken spinning fibre from the Lower Smith Creek deposits, which showed a length of nine inches, but of course this must be accepted as an unusual occurrence and is merely mentioned to show the length to which these fibres may be expected to attain.

Fibre of this latter length, it may be noted, is of little more real commercial importance than the best grades of spinning fibre, as it is infrequent, the special demand is small and the spinning machines must be reset to accommodate the new length of the fibre, entailing a greater expense in manufacture.

Per Cent of Fibre.

As may be expected in any similar deposit and noted in the examples shown, the great mass of the fibre is in the shorter lengths, but as is shown by the operation of the cards, the peculiar fibrous and spinning qualities are carried down to almost the most minute length. This short fibre furnishes the bulk of the material produced from the fibre zones and it is noted that the greatest or richest zones contain the shortest fibre. Many of the zones in these deposits show from 20 up to 50 per cent and even higher of fibre. In a number of cases, as may be readily noted from some of the specimens exhibited, the serpentine separating the fibre veinlets is very much in the minority. Commercially, as far as the operations of the present mills have gone, the fibre may be said to consist of about from 10 to 15, or in some cases, 20 per cent of the rock milled.

(Continued next month.)

SOME OBSERVATIONS ON THE REVOLUTION IN MEXICO.

By Charles A. Filteau, '07.

The revolution in Mexico, now that peace has been declared, presents some of its most interesting and important features. This seemingly paradoxical statement is made advisedly, because a state of revolution still exists, and will continue to exist for some time.

To a resident of the country while the insurrection was in progress the outcome could be nothing more than a conjecture, and the best lesson of time is to form no conclusions.

Since my return I have been a passive listener to some exceedingly illuminating statements regarding Mexico and its people, and one could almost conclude that the majority of his countrymen who had been in Mexico had held positions as newspaper correspondents, so strong is the tendency toward the sensational and the aversion for plain facts.

It is a point of observation that the alien of a few weeks' residence or narrow range of experience can offer more information regarding the situation, both political and social, and can relate more thrilling episodes than the "Gringo" who has traversed the country from Sonora to Guerrero and knows as well the mountaineer of Durango as the plantation slave of Vera Cruz.

Some one has said that what is true of the native of Chihuahua may not be true of the native of Jalisco, and it has been my own observation that the make-up and disposition of the Mexican on the western slope in Sinaloa differed materially from that of his neighbor on the eastern slope in Durango.

The financing of the revolution, concerning which there were so many conjectures expressed by the American press, was one of its least mysterious features. Arms and ammunition were confiscated wherever found and contributions for the "cause" were levied upon merchants and mining companies; in a word, the revolution financed itself.

During the earlier period of the campaign while the fighting was confined to the outlying districts of Chihuahua, the natives displayed great interest, as many of them took daily papers and communicated the news to those who did not, and it soon became evident that the spirit of discontent was almost universal, as was also the sympathy with the revolution. In talking with some of the more intelligent natives, I learned that these people felt that the country had been plundered and the enormous revenue derived from taxation and import duties was appropriated by the officials, both state and federal; nor were they ignorant of the fact that their elections were a mere farce and that the press was throttled. They would relate many other grievances, such as the unequal and unjust distribution of land, and the high rate of taxation, which they felt the peon had ultimately to pay.

I remember suggesting to a fair-minded citizen that Diaz had said he would give the

people the franchise when they were ready for it, and his reply was: "Why hasn't he shown us?" He further went on to say that while the country had been at peace for thirty years, and enormous revenues had been collected, they had no schools worthy of the name, and that industry had not been encouraged nor agriculture fostered.

Among the adherents of the government one would hear statements to the effect that the sympathizers and supporters of the revolution were those who had nothing to lose, that the tyrannical measures adopted by the government to throttle the press and free speech were necessary and justifiable in the cause of peace, and that the success of the revolution would mean chaos and anarchy.

It will be interesting to watch developments under the new government, and to note to what extent, if at all, these latter statements may be substantiated.

The insurrection had been in progress for some time in Chihuahua and had spread to Sonora and Durango before breaking out in Sinaloa.

Scattered reports had been received from the surrounding districts that this or that town had fallen into the hands of the rebels, in many cases being abandoned and retaken by the federal soldiers. The latter were recruited mainly from the larger towns and, of course, revolutionary in their sympathies, but the service offered a fair compensation and the chance of fighting being remote, they felt no scruples about enlisting.

There were about seventy of this contingent in the town of San Jose de Gracia, when on the evening of April 19th we received a telephone message from a nearby property that a band of insurrectos had appeared on the hill, and at about 11 o'clock the same evening the federal soldiers, accompanied by the "director," left for the town of Sinaloa, where they later became insurrectos and took possession of the town. On the morning of April 20th we saw the insurrectos pouring down the hills with cries of "Viva Madero." The man in command of this band was an educated Mexican by the name of Cuevos, but we afterward learned that the man who really controlled the situation was one Fortunato Eredia, a native of the pure Indian type and a bitter enemy of the president of our company.

After several days' deliberations, during which the usual contributions were levied on all those engaged in any business, and all arms and ammunition appropriated, a demand was made by Cuevos for a contribution of twenty-five thousand dollars for the cause, but when Eredia was consulted he emphatically stated that nothing less than two hundred thousand dollars would satisfy him, and he related the story of his wrongs in a very impassioned manner, nor did he attempt to disguise the fact that his motive was revenge. No settlement could be made and the contents of the safe were turned over, amounting to something over forty thousand dollars, mainly in bullion.

On the following day the American contingent left in a body, and, on reaching the railroad two days later, we found communications cut south of Cullacan, and the train I took north was stopped because of burned bridges and had to return.

When it became evident that there was no hope of getting out of Mexico by rail, I decided to take the train to Altata, a seaport on the Gulf, before this railroad also should suffer the same fate as the others. In this I was joined by five other Americans, and we got passage on a gasoline yacht chartered by the government.

With the usual foresight displayed by Mexicans, they left port with the magneto out of order and the batteries nearly exhausted, so we were compelled to make the trip by sail and ran out of both food and water before arriving in Mazatlan two days later.

In Mazatlan we found conditions much better than we had been led to expect. While the town had been attacked and the water supply cut, all was quiet during our sojourn and enough water was obtained from wells to supply the needs.

In Mazatlan we found many other of our countrymen waiting for passage north, and when the boat left port there were fifty-two first-class passengers aboard and accommodations for only twenty.

On arriving at Guaymas after three days' voyage, we were overjoyed to learn that the railroad north had not been interfered with, but it would be difficult to picture a more dismayed crowd of passengers when, next morning we awoke to see confronting us two bridges in flames.

We were still eighty miles from Nogales, and a number of us decided to abandon our baggage and walk to the border rather than return to Guaymas, as it appeared that this was to be a repetition of our experience in Sinaloa.

In this case, however, the bridges were cribbed up without interference and we arrived in Nogales a day late.

Thus nearly three weeks were consumed in making a journey which ordinarily requires less than twenty-four hours.

There are people who have tried
To be smart and dignified,
But there's just one little thing that they
have lacked.

They have cash enough, maybe,
And no end of pedigree,
But they haven't got a pennyworth of tact.
Now you wouldn't tell a lie—
Oh, no; you'd rather die—
For you're sure to be discovered before long.
But if only tact you've got, you can do an
awful lot

Which before you might have thought was
very wrong.

We rise and then we fall again,
We ebb and then we flow.
Whene'er our head is in the clouds
We're sure to stub our toe.

The Colorado School of Mines Magazine

Published every month in the year, at Golden,
Colo., by the Alumni Association of the
Colorado School of Mines.

Subscription price.....\$1.25 per annum
Single copies.....25 cents
Advertising rates on application to the Manager

OFFICERS OF THE ALUMNI ASSOCIATION.

ARTHUR F. HEWITT, '05	President
ANDREW WEISS, '99	Vice-President
FRANK M. DRESCHER, '00	Secretary
CHARLES N. BELL, '06	Treasurer
JUNIUS W. JOHNSON, '01	Executive Committee
LEWIS B. SKINNER, '95	
FREDERICK S. TITSWORTH, '95	Asst. Sec'y and Treas.
ORVILLE HARRINGTON, '98	

*Editor and Manager Colorado
School of Mines Magazine;
Manager of Capability Exchange.*

Address all communications to the Assistant Secretary and Treasurer, Golden, Colorado. Make all checks payable to the Assistant Treasurer.

CLASS EDITORS.

EDWARD J. DITTUS	1911
WALTER C. HUNTINGTON	1912
ADOLPH BREGMAN	1913
TSUNG TE KAO	1914

SPORTING EDITOR.

HAROLD C. PRICE	1913
-----------------	------

VOL. 1. JULY, 1911. No. 10.

NOTICE.

The Association has given up its postoffice box in Denver as it is inconvenient to have two postoffice addresses. Send all dues and communications to the assistant secretary and treasurer, Golden, Colo. If you wish to correspond with the other officers of the Association, use their regular postoffice addresses or send care of the assistant secretary.

EDITORIAL.

We do not like to be always "appealing" to readers of the Magazine for help, but we find that we must once more. As we do not feel at all comfortable when attempting to make one of those "heart-throb appeals, so eloquent and touching with its pathos that it so moves the hard heart of the most tight-fisted miser that he gladly opens his fat purse and, with tears in his eyes, casts all his pearls—oh, no—his gold—at the feet of the supplicant," we will remain on the earth and try a few plain facts, for this is a "ground-hog case."

Now, then, we have been sending the Magazine to all of the graduates of the School since last October and we started sending

copies to all of the students of the School in January. We followed this up with a request to all who were not subscribers, to please subscribe or to at least let us know if they were at all interested. Few have said that they were not interested, five or six graduates and comparatively few students, especially among the upper classmen. But—though we followed up these requests with bills, there are still a great many, nearly half of the graduates and more than half of the students, who have so far neglected to send in their subscriptions.

The subscription price, \$1.25 for twelve issues, barely covers the actual cost of printing and mailing your individual copy. We do not wish to stop sending it to any who are interested and really intend to subscribe and we believe that nearly all of the delinquents do intend to subscribe, but postpone it with the excuse that they are too busy, etc., but there are others who have been busy, also. The present editor has sent out over twelve thousand pieces of mail since January, addressed and stamped, nearly two thousand of which have contained written letters or appeals as well as attended to a few other matters, such as publish the paper, try to rustle new advertisements and jobs, etc. We do not mind the work, we really like to work, but we wish you would send in that \$1.25 and not make us use so many postage stamps in order to get it. Especially as the postage (and the \$1.25, if we ultimately fail to get it,) practically comes out of our own personal pocketbook. Just look up the agreement in the January number in regard to the assistant secretary and then divide the profit (paper profit) shown in the Assistant Secretary's report on another page, by six and add it to the minimum monthly salary as stated in the agreement. Then note also the following: Owing to the effects of a law passed by the late legislature requiring that all the expenditures of all state institutions be under the direct supervision and control of the state treasurer and to the viewpoint of the said state treasurer, the board of trustees finds it is impossible to continue the fifty dollar salary, at least through the summer. The state will need the money and a good deal more to pay a few politicians to keep a duplicate set of books at the Capitol.

Many of the graduates have been generous with their subscriptions. Some have offered to help the Magazine out financially by cash contributions, but we do not wish to do business that way, but we do want every graduate and student to do his share by subscribing at least, to send or get us a professional card or an advertisement, or a new subscriber, or even to send us the addresses of possible victims, boost the Capability Exchange by telling us of possible jobs, send in articles, news items, personals, jokes, adventures, etc., and, just for a change, do some or all of these things without making us send you five or six personal requests first. A great many have helped in some of these ways and we thank them sincerely, and we earnestly

hope we can thank the rest as sincerely in the near future.

A word as to the Capability Exchange: Owing to the revolution in Mexico and other causes, of which many of you are aware, engineering positions have been very scarce the past six months, and up to the present the Exchange has not shown a profit, though we have spent considerable time and some little money in postage, printing and letters advertising it. We are at present, however, trying to close up a few deals that ought to give us some finances to push the advertising of the Exchange. We very much need a stenographer to send direct personal letters and to "follow up" constantly.

As we, personally, have said many times, we, collectively, can and will make these affairs grand successes if every one of us will do his share and do it now and next week and the weeks after.

EASILY SPARED.

A German in a sleeping car was unable to rest on account of the snoring of fellow travelers on each side of him. Finally one of them gave a fierce snort and stopped still.

"Tanks!" exclaimed the wakeful German. "Von is det!"

The Alumni.

ALUMNI MEETING.

On June 9th at 4:30 p. m. the Executive Committee met in Mr. Tittsworth's office. Hewitt, Johnson, Tittsworth and Skinner were present, as was also the assistant secretary. The committee only remained in session long enough to appoint Orville Harrington assistant treasurer, and to appoint Arthur R. Hodgson as chairman of the Athletic Committee and alumni member of the School of Mines Athletic Board.

PERSONALS.

'92.

George K. Kimball, mayor of Idaho Springs, and Norton H. Brown, also of Idaho Springs, visited Golden recently.

'97.

M. D. Draper, of Draper & Gross, 745 Equitable Building, Denver, Colo., is now in Alaska opening up the copper property of the Hubbard Elliot Copper Company, located on the Copper River. He will remain in Alaska until October 1st.

H. B. Starbird is now irrigation engineer for one of the largest agricultural companies near Los Angeles. His home is in Los Angeles. He recently made the location survey for a thirty-mile railroad from Yucca, Ariz., to the McCracken mines.

A. H. Buck left the El Tajo Mining Co., Poza, Sonora, Mexico, on May 7th. The rev-

THE NEW QUARTERLY.

An Extension of the Dewey System of Classification Applied to Metallurgy, Metallography and Assaying.

By Robert M. Keeney, '10.

Volume six. Number one. Quarterly of the Colorado School of Mines, is just out and has been mailed to the Alumni. This number is one of the best of the Quarterlies and will prove to be a valuable reference book for any engineer's library, no matter how small or how extensive it may be. The Dewey decimal system of indexing is in use in nearly all large libraries and has the one great advantage over other systems in that it is capable of indefinite expansion. It can be applied successfully at the beginning of a card index by using only the main subdivisions, and later, as the index grows, closer subdivisions can be made by merely adding decimals to the old cards. Every engineer should have this Quarterly and apply the Dewey system to his reference cards. The Quarterly may be obtained by a simple request to the School of Mines.

Later the school hopes to get out a similar pamphlet applying the Dewey system to mining.

olution got too hot for him. He is now with the Revenue Tunnel Mines Co., Sneffels, Colo.

'02.

Charles E. Rowe, professor of mining and metallurgy, University of Texas, at Austin, visited the school and the new testing plant. He is married and the father of a sturdy 18-months-old youngster.

'03.

W. A. Sloan is chief chemist and metallurgist for the Shannon Copper Co., Clifton, Arizona.

'04.

Howard G. Washburn is chief engineer of the Federal Lead Co., Flat River, Mo.

'05.

Arthur Austin is chemist for the International Smelting Co., Tooele, Utah.

E. R. Richards expects to go to South America in the near future.

'06.

Chas. W. Badgley is engineer and chemist at the uranium and vanadium mines of the Standard Chemical Co., Naturita, Montrose County, Colo.

Karl E. Neugebauer is engineer for the Rio Tinto Copper Co., Terrazas, Chihuahua, Mexico.

'07.

A. M. Howat is mining engineer for the United States Smelting, Refining and Mining Co., with headquarters at Los Angeles, Calif.

Mr. and Mrs. Philo Grommon came home from Ophir a few weeks ago. Mrs. Grommon will spend the summer in Golden. Mr. Grommon returned to Ophir.

'08.

S. C. Sandusky is engineer for the Ellsworth-Klaner Construction Co. of Pueblo, and is located at Creede, Colo., where the company is building a large irrigation dam.

F. S. Dunlevy is division engineer for the Victor-American Fuel Company and is located at Hastings, Colo.

'07 and '10.

C. G. Warfel, '07, and F. A. Goodale, '10, with a Mr. McKirahan, have formed the Warfel-Goodale-McKirahan Engineering Co., with headquarters at Georgetown, Colo., and intend to do general engineering business. They have taken over the assay office formerly conducted by H. K. Miller, and will carry on a general analytical, chemical and assaying business in connection with the engineering work.

'10.

Leopold Silver, who has been located at Bisbee, Ariz., for some time, is taking a short vacation at Ocean Park, Calif.

'11.

G. W. Voelzel is at the Smuggler Mine, Aspen, Colo.

The little daughter of Mr. and Mrs. Chas. R. Wraith died in Denver a few weeks ago. The body was taken to Anaconda, Mont., where Mr. Wraith has a position in the smelter.

Roy F. Smith is with the Doe Run Lead Co., Rivermines, Mo.

Frederick Engle is with Ingersoll, Bell & James, Ouray, Colo.

COMMUNICATIONS.

Elizabeth Ranch,
Frank H. Jones, E. M., Prop.,
Jerome, Idaho, June 11, 1911.

Mr. Orville Harrington, Golden, Colo.

Fellow Classmate: As you are sending the Magazine to Mr. Jones, it will not be necessary to send it to me. As we are still on speaking terms, one copy is all we need and we are very much interested in it, especially the alumni news.

You ask for an article from me. I am afraid the boys would not be particularly interested in my present line of work, though it requires considerable "civil" engineering sometimes to keep the domestic machinery working smoothly and in perfect time.

Just now my interests lie in the growth of a fine garden, the hatching of thoroughbred chicks and rescuing a small boy from the irrigation ditches. He does love to make mud pies and to "do twimming."

Wishing the Magazine the success it deserves, and with best wishes for your own prosperity, I remain,

Sincerely,
FLORENCE CALDWELL-JONES.

Sneffels, Colo., June 21, 1911.

Mr. Orville Harrington, Asst. Secy. C. S. M. Alumni Association, Golden, Colo.

Dear Sir:—We have followed the various discussions, the personal items, the letters from our college chums, from the older and the later graduates, with a great deal of interest. In short, the magazine is perused from "kiver to kiver." The school items are pertinent, the philosophical sketches by Tsung Te Kao are illuminating in that they give us a glimpse of the modern Chinese ideas upon things Terrestrial and Celestial.

Emrich's letters seem to have received a great deal of attention. On the whole we are inclined to think they were intended to inject some ginger into the Association and believe they were successful.

We note with glee that old timers like Max At-H2O and Artie Collbran can still come back. It is to be hoped they smiled when they jumped on poor old Emrich and he away over in Russia, unable to hit back inside of a couple of months.

We are glad to learn that the magazine will be published through the summer months. It appeared to us that if it were not published the Capability Exchange would languish also—in other words the assistant secretary would look to other fields of endeavor and the coming of Fall would find both departments much disorganized.

Mining at the present time seems to be in such a condition that many of our members migrate from port to port, without regard to climate or season. At this writing the following graduates are located hereabouts: Thos. H. Woods, '97, is superintendent of the Camp Bird Mills. It is said they would close down for all time if Tom should leave. He has the sweet, cherub-like face of a freshman. One can hardly realize that he attended Mines when some of us were in knee pants.

Arthur H. Buck, also class of '97, is one of the Revenue Tunnel Mines Co.'s staff. His family, which isn't so small by any means, resides in Ouray.

E. H. Platt, '00, manages the Revenue Company and rules over our destinies with an iron hand. He is to marry a Miss McHugh of Omaha, on June 28th. We hope that this change for the better will modify his cast-iron (?) disposition.

A. H. Buckingham, R. E. Decou and self, represent the "naughty one" bunch. While A. H. B. is not a graduate, we feel that he is one of us. He and Ralph DeCou are old timers down at the Camp Bird Mills and appear to be indispensable. Both are married and have families. Ralph married a sister of Roger Downer, about 1903—he expresses no regrets for this hasty action, but is mighty proud of his wife and two children.

Charles N. Bell and Julius C. Ingersoll, Jr., both of '06, have an established engineering business with offices in Ouray.

Jesse T. Boyd, '08, is the Camp Bird mine engineer.

Charles N. Glasgow, '10, is the Revenue Company's assayer. Though a new arrival, he is making good.

It is possible that there may be other Mines men in Ouray County but the above are all I happen to know of.

Very truly yours,
F. E. LEWIS, '01.

ABSTRACTS.

The University has as yet no graduates. My class will finish in the spring of 1913. The system used here is quite different than at home. A student, after completing the work of some other minor college or mission school, secures admission by ability or pull to the Preparatory Department, where he remains three years. While there he covers all mathematics, physics and chemistry. He then enters the University proper, where he remains three years, taking some course entirely dependent on the foreign language that he has mastered sufficiently to enable him to partially understand his particular profession.

Some departments are conducted entirely in English, namely, Commerce, Finance and Engineering. Others are conducted in French, German and Japanese. By this arrangement some students are not fitted for the work they are compelled to take. This is especially so in my department. One student, a man over 45 years old, is supposed to have mastered the Chinese Classics. As a result of this task his mind is practically worn out and he will never make an engineer. Others are about "all in" with lung trouble.

During these six years the government pays all the expenses of the students. They also maintain an expensive set of directors. Each department has a director, a head master, and sometimes a sub-director. As a result, the government does not have money enough to carry more than one class at a time. As soon as my students graduate another class will move up from the preparatory department.

So it falls to my lot to give an entire mining course which, while I have a short weekly schedule, keeps me working hard. This term I have to teach mining methods, mine machinery, mineralogy, mechanism, and elementary metallurgy of the common metals.

The year is divided into two semesters, the first commences about April 1st and ends about October 1st; the second semester the reverse. During the first we have six weeks vacation and one month at Christmas. The foreign teachers are trying to cut the Christmas vacation down and extend the summer vacation. It is unbearably hot during the summer and neither the professors nor the students will work when it gets hot, so it is just a waste of time to attend class during June and August.

Due to the heat and terrific odors, all the foreign residents either go to the seashore near Tien Tsin, or to Japan, for at least three months, while the professors have to put up with most of it.

Most sincerely yours,

JAY LONERGAN.
Imperial University, Peking, China.

It does a fellow good to hear from old Golden, even if we do not always come out ahead in athletics.

Remember me to all the profs. and believe me,
Sincerely yours,

HOWARD SPANGLER.
Southern California Edison Co., Los Angeles, Calif.

THE ASSOCIATION OF THE ALUMNI OF THE COLORADO SCHOOL OF MINES.

ORGANIZATION.

The Association of the Alumni was organized June 7, 1895.

The Constitution and By-Laws were framed by a committee from the Class of '95 and adopted at a special meeting held the same evening just before the First Banquet at the Windsor Hotel, Denver.

OFFICERS.

Elected May, 1911.

Arthur F. Hewitt, '05.....President
Andrew Weiss, '99.....Vice-President
Frank M. Drescher, '00.....Secretary
Charles N. Bell, '06.....Treasurer

EXECUTIVE COMMITTEE.

Lewis B. Skinner, '95, term expires 1912.
Junius W. Johnson, '01, term expires 1913.
Frederick S. Titsworth, '95, term expires 1914.

Orville Harrington, '98, Asst. Sec'y and Treas.
Editor and Manager of the Colorado School of Mines Magazine; Manager of the Capability Exchange.

PRESIDENTS.

Wm. B. Middleton, '83.....1895-1896
Wm. B. Milliken, '95.....1896-1897
Edward E. Rowe, '95.....1897-1899
Charles W. Comstock, '90.....1899-1900
Edward P. Arthur, '95.....1900-1902
Arthur R. Hodgson, '99.....1902-1904
Robert S. Stockton, '95.....1904-1906
Herbert A. Canning, '97.....1906-1907
Geo. M. Post, '94.....1907-1908
Lewis B. Skinner, '95.....1908-1909
Frederick S. Titsworth, '95.....1909-1911
Arthur F. Hewitt, '05.....1911

FIRST VICE-PRESIDENTS.

Bela I. Lorah, '88.....1895-1896
Clyde M. Eye, '95.....1896-1897
George M. Post, '94.....1897-1899
John Gross, '97.....1899-1900
Jesse E. Dwell, '96.....1900-1901

Thomas G. Smith, '99.....1901-1902
Frederick S. Titsworth, '95.....1902-1903
Amos Slater, '00.....1903-1904
Herbert A. Canning, '97.....1904-1906
O. R. Whitaker, '98.....1906-1907
Lewis B. Skinner, '95.....1907-1908
J. Marvin Kleff, '06.....1908-1909
Wm. J. Hazard, '97.....1909-1910
Carl A. Allen, '05.....1910-1911
Andrew Weiss, '99.....1911

SECOND VICE-PRESIDENTS.

Frederick S. Titsworth, '95.....1895-1896
Latimer D. Gray, '95.....1896-1897
William H. Paul, '96.....1897-1899
Orvil R. Whitaker, '98.....1899-1900
Thomas G. Smith, '99.....1900-1901
Carl M. Warnecke, '97.....1901-1902

TREASURERS.

Robert S. Stockton, '95.....1895-1903
William J. Hazard, '97.....1902-1903
Gilbert L. Davis, '99.....1903-1907
Walter E. Burlingame, '01.....1907-1910
Fredrick C. Steinhauer, '99.....1910-1911
Charles N. Bell, '06.....1911

SECRETARIES.

Robert S. Stockton, '95.....1895-1903
Thomas G. Smith, '99.....1903-1904
Amos Slater, '00.....1904-1905
James H. Steele, '00.....1905-1909
Carl A. Allen, '05.....1909-1910
Arthur R. Hodgson, '99.....1910-1911
Frank M. Drescher, '00.....1911

BOARD OF TRUSTEES.

President, Frank Bulkley, E.M., Denver, Colo.
Secretary, James T. Smith, Denver, Colo.
Fredrick C. Steinhauer, E. M., '99.....
.....Denver, Colo.
Franklin Guiterman.....Denver, Colo.
William J. Bennett.....Golden, Colo.
Treasurer, Harry M. Rubey, Woods-Rubey National Bank, Golden, Colo.

CONSTITUTION.

ARTICLE I.

Name and Object.

Section 1. The name of this Association shall be "The Association of the Alumni of the Colorado School of Mines."

Sec. 2. The object shall be, the cultivation of friendship, acquaintance, mutual aid, and the elevation of the reputation and standard of the Alma Mater.

ARTICLE II.

Membership.

Section 1. Any person holding a degree from the Colorado School of Mines may become a member upon the payment of the initiation fee to the Treasurer.

Sec. 2. All members must be of good moral character and in good standing professionally.

ARTICLE III.

Officers.

Section 1. There shall be a President, a Vice-President, a Secretary, and a Treasurer.

There shall also be an Executive Committee consisting of the above officers, and three other members.

Election.

Sec. 2. The President, Vice-President, Secretary and Treasurer shall be elected at regular annual meetings, for a term of one year, and the three remaining members of the Executive Committee as follows, viz.: One for three years, one for two years, and one for one year, and thereafter these members shall be elected for a term of three years. Vacancies occurring during the year shall be filled by the Executive Committee.

ARTICLE IV.

Meetings.

Section 1. Regular annual meetings shall be held each year, on the day following the commencement exercises, unless otherwise provided by the Executive Committee.

ARTICLE V.

Emergency Clause.

Section 1. This Constitution may be changed or amended by a two-thirds vote of all votes cast on the question, personally or by letter, provided that notice of the amendment shall have been sent to every member whose address is known, at least one month before the counting of the votes. The Secretary may collect votes by letter, and the vote shall be canvassed and declared by the Executive Committee.

BY-LAWS.

ARTICLE I.

Rules of Order.

Section 1. The meetings of this Association shall be governed by Roberts' Rules of Order, except where the same conflicts with the Constitution and By-Laws of this Association.

ARTICLE II.

Quorum.

Section 1. A quorum shall consist of twenty members, who may be represented by proxy, provided that at least ten members are present in person.

ARTICLE III.

Duties of Officers.

Section 1. Duties of President:
The duties of the President shall be to preside at all meetings, announce business, put all motions, decide tie votes on questions of order, and appoint Local Committees. He shall also be chairman of the Executive Committee.

Sec. 2. Duties of Vice-President:
The duties of the Vice-President shall be that of President in his absence or inability to act.

Sec. 3. Duties of Secretary:
The Secretary shall keep a record of the proceedings of the Association and shall publish and distribute an annual pamphlet containing the Constitution and By-Laws, his report, the report of the Treasurer, the report of the Standing Committees, together

with a list of the officers and members of the Association, and any other papers of interest to the Alumni.

The Secretary shall, upon the presentation of a proper bill, make out a regularly numbered voucher or warrant on the Treasurer, for the necessary amount. In case of dispute in regard to a bill presented for payment it shall be referred to the Executive Committee.

Sec. 4. Duties of Treasurer:

The Treasurer shall collect all dues and take charge of all moneys. He shall keep a record of the finances of the Association and shall make a report to the Association at its annual meeting. This report shall also be delivered to the Secretary for publication in the annual pamphlet. The Treasurer shall pay out money only when a regular voucher or warrant bearing the signature of the Secretary, is presented. In case of dispute in regard to paying a bill, it shall be referred to the Executive Committee.

Sec. 5. Duties of the Executive Committee:

The Executive Committee shall elect the standing committees, audit the Treasurer's report, act as final authority in determining the expense of the Association, and arrange for annual dinners.

The Executive Committee may call special meetings of the Association when it is deemed necessary, and may employ an assistant secretary and assistant treasurer at Golden to act as manager of the Capability Exchange, managing editor of the Colorado School of Mines Magazine, and fulfill the duties of the secretary and treasurer as provided for in Sections 3 and 4 of this Article, under such restrictions as the Executive Committee may impose. While an assistant secretary and treasurer is employed the Secretary and Treasurer shall act as auditors and examine and audit the books, accounts and reports of the assistant secretary and treasurer at least twice a year (in May and in November), certify to the accounts and reports, if found correct, and report the result of their examination to the Executive Committee.

The Colorado School of Mines Magazine will be the official organ of the Association, and in it will be printed the reports provided for in the By-Laws as they may be submitted. The number containing the annual reports of the Secretary and the Treasurer will also contain the Constitution and By-Laws of the Association, and will be considered as the annual pamphlet provided for in Section 3 of this Article.

The Executive Committee shall have full control of the assistant secretary and treasurer, and decide all fundamental points in the conduct of the Colorado School of Mines Magazine and the Capability Exchange.

ARTICLE IV.

Election of Officers.

Section 1. The officers of the Association shall be elected by a majority of all votes

cast. Votes must be cast either by ballot or by letter.

ARTICLE V.

Special Meetings.

Section 1. Special meetings shall be called as provided for in Article III, Section 5, of the By-Laws, or by petition signed by at least ten members.

ARTICLE VI.

Annual Dinners.

Section 1. The Annual Dinner shall be held on the same date as the Annual Meeting, unless otherwise provided by the Executive Committee.

ARTICLE VII.

Initiation Fees and Dues.

Section 1. Initiation Fees: The Initiation Fee of this Association shall be fifty cents.

Sec. 2. The dues shall be one dollar and fifty cents (\$1.50) per calendar year, payable to the Treasurer or the Assistant Secretary and Treasurer of the Association, before the first day of June.

Notice of dues shall be sent to each member, whose address is known, on or before the first day of February, and if the dues of any member shall remain unpaid by the last day of April a second notice shall be sent him, and if such dues remain unpaid on June 1st his name shall be stricken from the roll and he shall not be considered in good standing.

Should he desire to again become a member, he may do so upon payment of the initiation fee and the dues for the current year.

A new graduate of the Colorado School of Mines may become a member of the Association any time during the first six months after receiving his degree, upon the payment of the initiation fee and seventy-five (75) cents as dues for the remainder of that calendar year, unless the graduate was, as an undergraduate, registered with the Capability Exchange, in which case his registration fee will be credited upon graduation as initiation fee and dues for that year.

Sec. 3. A life membership in the Association may be obtained by any member in good standing upon paying to the Treasurer the sum of Fifteen Dollars (\$15.00) and by maintaining the good moral character and professional standing required of ordinary members.

ARTICLE VIII.

Standing Committees.

Section 1. There shall be the following standing committees: Committee on Nominations, Committee on Athletics, and Committee on Instruction.

Sec. 2. The Committee on Nominations shall consist of five members, not officers of the Association, whose duty shall be to receive nominations from members for President, Vice-President, Secretary and Treasurer, and for members of the Executive Committee, and announce the same by written notices to each member one month before annual meeting.

Sec. 3. The Committee on Athletics shall consist of five members, whose duty shall be to keep a record of the proceedings of the athletics of the Alma Mater, and encourage the same when in their power.

Sec. 4. The Committee on Instruction shall consist of five members, whose duty shall be to investigate the course of study followed at the Colorado School of Mines, and make a report of the same at the annual meeting of the Association.

ARTICLE IX.

Emergency Clause.

Section 1. These By-Laws may be changed or amended by a two-thirds vote of all votes cast on the question, either personally or by letter, provided that notices of the change or amendment shall have been sent to every member whose address is known, at least one month before the counting of the votes. The Secretary may collect votes by letter, and the votes shall be canvassed by the Executive Committee.

ALUMNI PIN.

The Alumni Pin is patented and can only be obtained by an order from the Secretary or Assistant Secretary, Golden, Colo.

The Pin is made by The H. H. Tammen Curio Co., 1524 Arapahoe street, Denver, Colo.

ASSISTANT SECRETARY'S REPORT.

The various elections, meetings, banquets and other activities of the Alumni Association have been duly reported in the Magazine from time to time and it is unnecessary to reprint such material at this time. Owing to the restrictions imposed by the new law governing the financial conduct of all state institutions, and to lack of funds, the School does not feel able to publish the "Bluebook" with the list of the graduates and their addresses. We will endeavor to publish the names and addresses in the August number of the Magazine and also a list of the members of the Alumni Association in good standing.

Following is a brief statement of the financial condition of the Colorado School of Mines Magazine May 31, 1911. The Assistant Secretary does not feel justified in spending the time that would be necessary to sort out all the individual items of receipts and expense in order to make a full detailed report, when there are so many more important affairs needing attention. The accounts have been carefully kept and the Secretary and Treasurer will carefully examine them twice a year and report to the Executive Committee.

Magazine accounts: From Oct. 1, 1910, to May 31, 1911, inclusive:

Credits.

Total receipts from subscriptions, \$425.95, divided as follows: \$279.62 subscription fund to be credited 1-12

per month. Portion credited as receipts to May 31.....\$146.83
Total receipts from advertisements and copies furnished the C. S. M. Library for exchange purposes..... 544.54
Outstanding advertising accounts..... 51.12

Total credits.....\$742.99

Expenses.

Total Magazine expenses, printing, postage, etc.....\$740.90

Profit\$ 1.09

Total cash on hand, \$279.62+\$1.09=
\$280.71, less outstanding advertising, \$51.12, leaves.....\$229.59

ORVILLE HARRINGTON,
Assistant Secretary.

ASSISTANT TREASURER'S REPORT.

As the former Treasurer has been too busy to get his report of the expenditures for the last year in shape in time for this number of the Magazine, the Assistant Treasurer makes this statement of the financial condition of the Alumni Association on May 31, 1911:

Received from Fred C. Steinhauer, cash.....\$ 727.24
Received from Fred C. Steinhauer, certificate of deposit..... 225.09
Received from dues, banquet, etc., to May 31, 1911..... 115.70

\$1,068.03

Paid out, salary Assistant Secretary, banquet, luncheon, printing, etc., (all debts contracted before May 31 and not previously paid)..... 251.90

Leaving a balance on hand May 31 of\$ 816.13
As against \$314.46 in 1909 and \$554.88 in 1910.

For comparative purposes the present balance on hand should be nearly \$100 greater, as the 1911 banquet has been paid for out of the year's receipts, as was also the 1910 banquet. It begins to look as though we will be able to get our life membership fund intact again.

ORVILLE HARRINGTON,
Assistant Treasurer.

The Disadvantages of Reputation.

The Early Bird woke in the gray of the dawn
And hustled him out of the nest;
His feathers were ruffled, his eyes were half shut,
He hadn't had near enough rest.

And "It's pretty hard lines," any one who'd been up
Might possibly heard him affirm,
"When every one else can be catching a nap,
I have to be catching that worm."

College Notes.

SENIOR TRIP.

By Edward J. Dittus, '11.

On April 25, 1911, at nine a. m., the class of 1911 left for the annual senior trip. The class numbered thirty-six and were under the supervision of Dr. F. W. Traphagen, Prof. F. H. Cronin, A. J. Hoskins and A. C. Smith. Mr. Keeney accompanied the class as far as Leadville, returning to Golden from there. Professor W. G. Haldane joined the class at Castle Gate. Four cars were used—two sleepers, a baggage car and a day coach.

The first stop was made at Portland, where the Colorado Portland Cement Company's plant was visited. After the inspection the officials kindly gave the class a dinner which was very highly appreciated, as well as the zeal shown in the explanation of the details of the work.

The second stop was made at Canon City, arriving there in the evening. The morning and part of the afternoon of the next day was spent in studying the geology of the vicinity and in an inspection trip through the Empire Zinc Company's plant, where the most interesting features were the Wetherill electrostatic separators and the large Wilfley roasters in the course of erection. A large number of men visited the state penitentiary and all made careful note of the exits. (For possible future use.)

The next stop was at Leadville, where the first day was spent in the study of glacial geology and in the inspection of the New Monarch and Wolfstone mines. The enormous smithsonite and calamine deposits of the Wolfstone were very interesting. The rest of the time was spent by the "miners" in the Yak tunnel and A. V. smelter, and by the "mets" in the Yak mill and the A. V. smelter.

Our next stop was at Shoshone, where the Central Colorado Power Company's hydro-electric plant and the hanging lake were visited. Sunday was spent in Glenwood Springs where everyone thoroughly enjoyed the pool and caves.

At Castle Gate the large coal mines were inspected. From here the class proceeded to Salt Lake City, which was made the headquarters for several side trips.

The first trip out of Salt Lake City was to Cottonwood Canyon, where the glacial geology was studied and a small hydro-electric plant visited. The following day the cars were taken to Park City. Here the Grassall Chemical Company's zinc plant was visited the first morning and the Daly Judge mill and mine the following afternoon. In the evening a dance and a banquet were given the class by Messrs. Dyer and Williams, graduates of the school and now with the Daly West Company. The evening was a most pleasant one, and I take this opportunity to thank Mr. Dyer and Mr. Williams in behalf of the class for their kindness. The following morning and part of the afternoon

were spent in the inspection of the Daly West mine and mill. We returned to Salt Lake late in the afternoon.

The next trip was made to Bingham Canyon, where we visited the Highland Boy mine the first day. The second day the "miners" visited the Utah Consolidated mines, both the open pit and the underground workings. The "mets" rode from Bingham to Tooele and there visited the new Tooele smelter. A lunch was enjoyed there, the company very kindly bringing it from Tooele and serving it at the plant. It was heartily appreciated, and in behalf of those who enjoyed the repast, I wish to thank those who were responsible.

The next trip was to Garfield, visiting the Magna and Arthur mills of the Utah Consolidated Copper Company and their power house. The next day the "mets" visited the Midvale plant and much interest was shown in the Huff electrostatic separators used there. The "miners" studied the geology in the vicinity of the University of Utah. Evening found us on the way to Butte.

At Butte we spent our time in visits to the various mines. A dance was given us by the Montana School of Mines. The dance was very enjoyable and we thank the men of the Montana School of Mines. A baseball game was played before the dance between the senior team and the Montana School of Mines. It was a closely contested game, but was won in the ninth by our team. The "miners" remained in Butte a week, the "mets" leaving at the end of three days for Anaconda, where the various departments of the Washoe smelter were visited and much time spent in each department. The last few days were given over to lectures by Superintendent William Wraith and others. These lectures were very interesting and highly appreciated by all.

A baseball game was played at Anaconda between the Senior team and the City team of Anaconda. The game was played in a snow storm and resulted disastrously for the school. The score was 19 to 2 against us.

From Anaconda we returned to Golden with the feeling that the trip was most highly profitable and that the month was one well spent.

Y. M. C. A. NOTES.

Estes Park Conference.

The Rocky Mountain Student Conference was held June 9 to 18 in the new location recently selected by the International Committee. That the selection was a wise one is the opinion of every man who attended the conference this year. From a geographical viewpoint alone, it is the logical place for such a conference, for there are absolutely no causes of distraction and the interest of the delegates is easily maintained during the full time of the conference. Then, too, as a place

of beauty and interest and as a place for complete and absolute rest, Estes Park cannot be surpassed.

Of the natural beauties of the Park, nothing adequate can be said by anyone; the scenery must be viewed before it can be appreciated. The camera helps to give one an idea of the lavishness with which nature has decorated this section of Colorado, but without the wonderful colors, that the camera does not reproduce, the pictures are very different from the ones spread before the eye of the visitor.

As this was the first year that the conference was held in the Park, the attendance was not quite as large as it was at Cascade last year, but one hundred and thirty men came from the colleges of Colorado, Kansas, South Dakota and Oklahoma. Fifty of this number were from Colorado, and next year every college is planning to double its numbers. This is necessary if we are to keep the conference in this section of the country, for the men of Eastern Kansas are anxious to go to Lake Geneva, Wisconsin.

The leadership was unusually strong this year, ranking with the great Northfield Conference in Massachusetts. Such men as Dr. C. A. Barbour of New York City, Dr. Hugh T. Kerr of Chicago, Mr. W. F. Cooper of Washington, D. C., Mr. A. J. Elliott, or "Dad," as the college men know him, Mr. E. C. Carter of New York City, Mr. Harry Munroe of Chicago, Mr. E. T. Colton of New York City, Dr. Frank T. Bayley of Denver, Mr. Harold W. Moore of Brush, Colo., and Rev. P. V. Jeness of Denver, were the principal leaders and speakers.

The athletic events were all good. Kansas defeated Colorado in baseball, 1 to 0, in as fine a game as is usually seen anywhere. Colorado won the track meet by scoring 45 points to 23 for Kansas and 13 for Nebraska. The honors in tennis went to Kansas, but Colorado was in the tournament up to the finals.

Taken altogether, it was a fine and helpful week, and the Mines delegates, A. W. Harris, W. C. Huntington, Y. K. Kwong, F. B. Harris and J. B. Watson, are anxious that a large number of men represent this school at Estes Park next June.

MISCELLANEOUS.

Prof. and Mrs. A. D. Test left June 17th for Washington, D. C.

Prof. Chas. R. Burger left June 26 for Steamboat Springs, where he has a small farm.

The C. S. M. boys who are still surveying in Golden, gave a highly enjoyable dance at Guggenheim hall Saturday night, June 17th.

Professors Van Horn, Smith and Howard, accompanied by a number of students of the Case School of Applied Science, Cleveland, Ohio, were interested visitors in Golden for

a week in June, inspecting the smelter, School of Mines, and studying the geology of this section.

A. R. Barbour, a former School of Mines man, was married to Miss Grace Lewis recently. The couple will live in Cripple Creek.

Prof. C. E. Smith has received an offer to assume charge of the department of geology and mineralogy at the New Mexico School of Mines.

Richard Meentz left on Monday for Butte, Mont., where he will put in the summer getting practical experience in the mines, preparatory to taking up the last year of his course at the School of Mines.

Twenty students from the Missouri School of Mines at Rolla, Mo., visited the Golden school, the smelter and other places of interest in June. They were in charge of Prof. J. W. Eggleston, who was formerly an instructor in the department of geology and mineralogy at the local institution.

BOARD OF TRUSTEES.

The first regular meeting of the new board of trustees was held June 8th.

State Treasurer Rody Kenehan attended the meeting. The members of the board took up with Kenehan the matter of conducting the affairs of the school under the new Hills bill, passed at the last session of the legislature.

Frank Bulkley, president of the board, outlined the policy necessary to be followed under the new regime.

The bill provides that the state institutions shall deposit all funds with the state treasurer, and for any expenditures the board of trustees shall draw vouchers, which will be presented to the state auditor and paid by the treasurer. All supplies must be purchased in the same manner.

The meeting discussed the amount of money necessary to be expended and agreed to stay within an estimated appropriation.

SOME RECENT ARTICLES OR ABSTRACTS OF ARTICLES REFERRING TO THE SCHOOL OF MINES.

Mr. Kenehan and the School of Mines.

Let us see how this thing stands when viewed impersonally. The School of Mines of this State is an institution with something of a national reputation. Of all our foundations of public learning it is, perhaps, the most popular in Colorado. The people understand what it is doing; they realize the importance of its work; they appreciate the kind of men it is graduating; they see it as something fundamental to our common fortunes. Colorado is mineralized territory and the students of the School of Mines are learning how to turn that min-

eral into the very necessary dollar. And Dr. Victor Alderson, the President of the School of Mines, stands as well with the public as the institution he administers. His qualifications for his work are admitted; his devotion to the School is unquestioned. His financial management of the School has been honest; his devotion to scientific methods, his insistence upon sound training, are sincere. And yet, in the face of these facts; despite the fine effort that is now being made to accelerate the mining development of Colorado, a Denver afternoon paper of last Friday published a statement to the effect that the School of Mines would not be reopened next term unless Dr. Alderson were removed from his incumbency. That excellent blacksmith and impeccable gentleman, the Hon. Roady Kenehan, treasurer of state, was quoted as authority for this threat. He was cited as chief witness to the charge that the School was squandering money. He was pictured as steaming with wrath at the conditions his implacable eye had uncovered in the cost of, alleged, junketings which revolted his severe and puritanical soul. And the story was emphasized by a display of red ink and a large prominence ordinarily vouchsafed by the paper in question only to murders of the most horrific character. Taken altogether it was a poor thing, clumsily done; but it wasn't honest, either to the School of Mines or to Dr. Alderson, and the good name of the School of Mines and its president are things of which we should all be solicitous. However, as we say in Denver, "every 'knock' is a 'boost.'"—(Editorial, Hugh O'Neill, Denver Times, June 4, 1911.)

TEST PLANT WILL STIMULATE MINING THROUGHOUT STATE.

Hundreds of mines in Colorado that now are idle will resume operations when the state ore-testing plant that is in course of construction at Golden is opened to the use of mine-owners, is the belief of Dr. Victor C. Alderson, president of the School of Mines.

"This is the first plant of the kind in the United States," said Dr. Alderson today, "and I think that it will be of vast benefit to the mining industry and to the state. There are millions and millions of tons of ore in Colorado that won't stand shipment charges and smelter charges, because the owners do not know how to concentrate their product so that it can be shipped and smelted at a profit.

"When the ore-testing plant is in operation the mine-owners will ship their low-grade or refractory ores to Golden, where we will test the ores commercially and tell the owners just what kind of concentrating plants they should build for the local treatment of the ores at the mines.

Will Remove Drawback.

"Already hundreds of mine-owners have asked me when the plant will be completed. As soon as it is put in use I look for renewed activity in mining circles. The walls of the building now are being completed. If Governor Shafroth signs a bill now pending before him, making an appropriation of \$50,000 to equip the plant, it should be completed during the coming autumn.

"One of the drawbacks to mining in Colorado has been caused by the inability of mine-owners to definitely ascertain what kind of concentrating plants they should put up near their mines. There is no place in the United States where they can send their ores for that purpose to have them tested out. But this condition soon will be changed.

"The testing plant will serve as a great laboratory for the students who attend the School of Mines, but the commercial tests, of course, will be made by experienced men. During last summer the work on the testing plant was stopped because a Chicago firm that held the contract for the steel was unable to make the required shipments. A fire had destroyed its factory. But the work now is going ahead rapidly."

School Loan Returned.

Two years ago Dr. Alderson visited England, Germany and France to inspect ore-testing plants that are in use in those countries. He says that one of the best plants of that kind is in Magdeburg, Germany, and that ores are shipped from remote points so that they can be tested for the benefit of mine-owners. Because of the tests that have been made there are hundreds of mines in Europe, that probably would be idle otherwise, now in operation.

Dr. Alderson says that about half the money appropriated for the ore-testing plant by the legislature two years ago was temporarily transferred to the general school fund last summer, while work on the testing plant had halted. Several months ago the money was returned to the special building fund and has been used as the legislature directed.

The recent General Assembly made an appropriation of \$50,000 to equip the testing plant. By a clerical error the bill, as sent to Governor Shafroth, made the appropriation \$75,000. Attorney General Griffith yesterday notified the Governor that he can change the bill to \$50,000, as adopted by the legislature, without invalidating it. It is probable that the Governor will approve the measure.—(Denver Times, June 3, 1911.)

ALDERSON'S AIM TO MAKE MINES SCHOOL GREATEST IN WORLD.

(By Martin Dunn.)

Victor C. Alderson is well set up, vigorous, energetic. His 49th birthday occurred last Sunday. He is black-haired, black-bearded, dark-complexioned and has a sin-

gle ambition. His ruling passion is to make the State School of Mines the greatest mining school in the world.

To the people of Golden, of Colorado and the mining men of the world, Victor C. Alderson is known as Dr. Alderson. And Dr. Alderson now is and has been president of the State School of Mines since July, 1903. Until last February Dr. Alderson's term of office was from day to day, "at the pleasure of the board of trustees."

At that time a director of a large educational institution, in search of a man about the same size, mentally and physically, as Dr. Alderson, came to Colorado for the purpose of inducing him to leave the School of Mines. This caused the directors of that school to insist upon a definite understanding with him, and Dr. Alderson will be a fixture at the institution until September, 1912, at least.

Glad He Came.

"The reason that I came here," said Dr. Alderson today, at the School of Mines, Golden, "was because I saw an opportunity to do some constructive work that would be of permanent value. I did not seek the place; I was invited to come here and I am glad that I did so. I looked over the situation and saw that, geographically, the State School of Mines had the advantage of any similar institution in the United States. It is situated in the heart of the mining region, has facilities at hand for giving students virtually all kinds of training that they desire in all branches of mining.

"I also saw that, as the saying is, the school was run down at the heels. I wanted to build it up. I foresaw that the coal deposits in Routt county would be opened up; that the clays, quarries and various kinds of mines in Colorado would be developed to a wide extent. I wanted to, if possible, help in the work of exploiting and developing them. I desired to turn out a vigorous, successful type of educated mining men—that, I think, is why I decided to come here.

"And you ask me my chief ambition, and I tell you, that it is to have the greatest mining school in the world, here at Golden. And we are going to have it. It takes hard work; it takes energy to overcome unfair and undeserved opposition, but I still am on the job and hope to carry out my ambition."

Rapid Growth Made.

Since Dr. Alderson took charge of the school in 1903 there have been changes that surprised the mining men of America. So high are the standards set by the institution and so broad the curriculum, that China, Korea, England, Mexico, Canada, Ireland, South America, other countries, and virtually every state in the Union are sending its students to Golden. Fifty-three per cent of the students are registered from places outside of Colorado. Six years ago the attendance from this state was 74 per

cent of the total and only 26 per cent from outside. There are at present 350 students. In 1902, just before Dr. Alderson took charge of the school there were but 212.

Dr. Alderson takes almost as much pride in the increased value of the property of the School as in the added attendance.

"In 1902," said Dr. Alderson, "the total value of the School of Mines property was \$245,770. In 1910 the total value was \$723,841. The increase amounted to \$478,070.

Overdraft Cut Down.

"In the same period we cut down the overdraft. In 1902 that amounted to \$30,376, and in 1910 to but \$7,781. These overdrafts are caused by the manner in which the School of Mines receives its support. It derives one-fifth of a mill on each dollar of the assessed property of the state, and this is known as the 'School of Mines Tax.' This tax is paid in part every six months. The result is that at the periods when the money is paid in we are well supplied with cash, but as each period draws to a close we find our treasury empty. We issue vouchers and the banks hold them until new taxes are paid in. The vouchers issued against future taxes are called overdrafts. All the state institutions that depend on the mill levy do the same as the School of Mines."

Ten of the students are from China. They may be termed imperial government students. From the money which the United States returned to China as the unclaimed part of the Boxer claims each student is allowed \$1,000 per annum. Dr. Alderson says that the young men are well prepared, especially in mathematics, while their knowledge of English is fair. They are rapidly mastering the English idioms, including the football cheers.

Dr. Alderson came to the School of Mines from the Armour Institute of Technology, Chicago. He was with that institution from 1893 to 1903 and was dean when he severed his connections. Dr. Alderson was born at Plymouth, Mass., June 4, 1862. He is a graduate of Harvard, and holds degrees from other schools. He is a member of a number of scientific and patriotic societies, and is a writer on scientific and mathematical subjects and technical education.—(Denver Times, June 6, 1911.)

A gentleman walking down a street saw a very excited woman. Asking why, he was told her child had swallowed a quarter. He stood the child on its head, shook it and the quarter came up.

"Oh, thank you," said the woman, "you certainly know your business. Are you a doctor?"

"No, madam," he replied, "I am a collector of internal revenue."

The man who tells his troubles, usually convinces his hearers that he is getting his desserts.

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:

Carl E. Ambrosius, '88.
Walter J. Atkinson, '96.
Charles F. Breed, '01.
Harry F. Bruce, '00.
Edward J. Bumsted, '01.
Paul H. Carpenter, '10.
Burt Cole, '92.
L. A. Dockery, '95.
William L. Fleming, '03.
E. E. Greve, '05.
F. R. Hamilton, '98.
Leon P. Hill, '08.
George F. Hoyt, '96.
W. H. Jackson, '01.
Gilbert E. Jewel, '93.
B. M. Johnson, '08.
Fred B. Kelley, '99.
A. R. Kenner, '07.
Oscar A. Lampe, '98.
N. W. Logue, '97.
William B. Middleton, '83.
H. E. Nelson, '97.
Enrique A. Schuman, '97.
T. E. Stephenson, '06.
B. T. Wells, '04.
Charles E. Wheeler, '94.

PROFESSIONAL CARDS.

BULKLEY, FRANK

Mining Engineer

Cable Address: Bulkley, Denver.
Code: Bedford McNeil.

850 Equitable Building, Denver, Colo.

WE HAVE JUST STARTED THIS BRANCH OF THE MAGAZINE AND RECOMMEND THE ADVISABILITY OF THUS REMINDING OUR READERS THAT YOU ARE IN BUSINESS FOR YOURSELF. YOU WILL SURELY FIND IT PROFITABLE AS WE MAKE A VERY REASONABLE RATE FOR SPACE.

THE J. F. BROWN INVESTMENT CO.

Real Estate, Loans and Securities,

202 Boston Building, Denver, Colorado.

It is hard, sometimes, to have patience with people who have lost theirs.

A man who is true to himself has neither time nor inclination to be false to others.



The
Roessler & Hasslacher
Chemical Company

100 WILLIAM STREET
NEW YORK

Works: Perth Amboy, N. J.

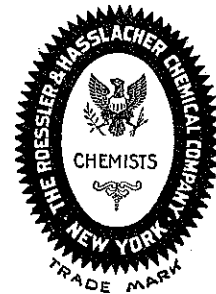
REGULAR CYANIDE

98-99%

CYANIDE OF SODIUM

128-130%

ALL OTHER CHEMICALS FOR MINING PURPOSES



The
COLORADO SCHOOL OF MINES
MAGAZINE

Vol. I.

GOLDEN, COLO., AUGUST, 1911.

No. 11

Reminiscences of the Hawaiian Islands

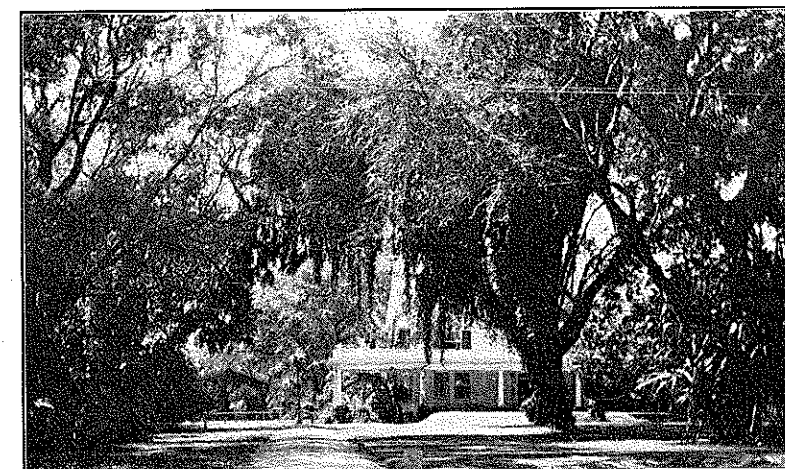
By H. D. Phelps, '10

This short article has nothing to do with mining, and is only intended to be of interest to those of the Alumni who have made their "pile" in the mining business, or as mining engineers, and are now looking for some enjoyable means of spending their time and money. The writer cannot lay claim to such distinction, but no doubt there are some so situated.

At any rate, if chance, fate or fortune ever

That reminds me of the gag the guide gets off to the tourists seeing Golden Gate Park. It goes something like this:

"Ladies and gentlemen, you see on your right a grove of eucalyptus trees. The Southern Pacific owns and cultivates great forests of these trees throughout the Western States. There are many other things owned by the Southern Pacific. In fact, they would own the earth if they could.



GOVERNOR FREAR'S RESIDENCE

favors you with an opportunity to make a visit to the Hawaiian Islands, don't miss it. And let me say here, that if you have any surplus cash left after you get there—besides what you need to return on—there are Americans over there who will help you spend your money, or you can speculate a little on the sugar market, or buy a few thousand acres of pineapples. But to give you a few impressions of Honolulu—about the first thing you see as you steam into the harbor are the big oil tanks, and plant, of the Standard Oil Company. Nearly all of the Pacific steamships use oil-fired boilers.

But, ladies and gentlemen, we have one thing here which they do not own, and that is the great Pacific Ocean. No! they don't own the Pacific Ocean. The Standard Oil Company owns that!"

But to return to Honolulu. I believe the one thing which appeals most to the American tourist is the extreme hospitality of the people. Not only the Hawaiians, but the Americans there, as well.

The Hawaiians are naturally a generous, hospitable, easy-going class of people. They are very fond of music, and small bands of them still walk about the streets in the