VOL. X DECEMBER, 1920 No. 12

COLORADO SCHOOL OF MINES MAGAZINE

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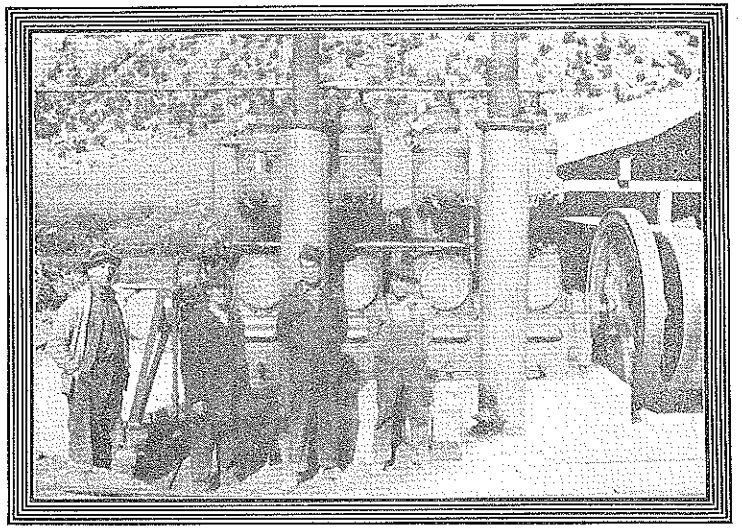

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COLORADO SCHOOL OF MINES MAGAZINE

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C. ERB WUENSCH, '14, EDITOR.

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The Future of the Petroleum Industry in the United States

By Francis M. Van Tuyl.

Introduction.

Few people realize the magnitude of the oil industry in the United States, and that this is destined to undergo a revolution within the next few years if we are to maintain the world leadership not only in this field but in several others dependent upon it. The oil industry, including the production, transportation, refining, and distribution of petroleum and its products, is the third largest in this country today. Yet we are faced with the undeniable fact that our petroleum resources are far from being inexhaustible. Indeed, several technical men of high standing have stated it is their belief that the peak of production has already been reached. It is doubted by many if this is true. But all who have made a careful study of the subject agree that our petroleum resources are not sufficient to completely meet the rapidly increasing demand of the country upon the industry for more than a short period of years. In the year book of the United States Bureau of Mines for 1916, Mr. Van H. Manning makes the following statements (pages 116 and 117), regarding our petroleum reserve:

"At our present rate of consumption our estimated supplies are sufficient to meet our present needs for a comparatively short period, conservatively estimated to be from 25 to 30 years, taking no account of the increasing demand for petroleum and its products. This estimate not only includes the oil fields already known and developed, but makes liberal allowances for undiscovered fields in prospective oil territories. It should not be thought that our petroleum supply at the end of this period will be cut off abruptly, for the wells will continue to produce through a declining output for many years. * * *

"This country is producing about two-thirds of the world's output of crude petroleum, and has produced approximately 2,750,000,000 barrels (estimate of 1916) since the drilling in of the first well by Col. Brake in 1859. Our future supply from both proven and prospective oil fields, based on geological possibilities, is estimated to be approximately 7,402,000,000 barrels, which will last us only about 25 years at our present rate of consumption."

It will be noted that this estimate does not take into consideration the increase in production from year to year, induced by extensive drilling campaigns following in the wake of greater demands upon the industry and increased prices for petroleum and its products.

Bearing in mind that the decline in yield per well per day is comparatively rapid, and that the life of a single pool which has been thoroughly developed is usually not more than from ten to thirty years, the peak of production generally being reached soon after discovery, the amount of development work required in order to maintain even a uniform output will be appreciated. In this connection it is interesting to observe that there are approximately two hundred fifty thousand producing oil wells in the United States today, but that the average production per well per day is only four and one-half barrels.

The annual increase in production, therefore, has been accomplished only by the most extensive campaign of wildcat drilling the world has ever known. This has resulted in the discovery of several important new pools yearly. It is doubtful if the future drilling campaign will be attended with the same degree of success, for the percentage of large undiscovered pools in possible oil territory is yearly becoming less, and the attendant chances of striking oil in exploratory drilling consequently fewer.

A few years ago the situation which confronts the oil industry was viewed with considerable concern by those familiar with the circumstances, but the recent discovery of extensive deposits of oil shale at several localities in this country, capable of yielding many times more oil than ever has been or ever will be recovered from wells the world over, lends a more optimistic aspect to the problem. However, the difficulties which the oil industry will encounter in adapting itself to the untilization of oil shale are considerable, and the change will undoubtedly be deferred by the larger oil companies as long as possible. Let us, therefore, consider briefly the present status of the various oil fields and the possible methods of prolonging the life of our petroleum resources.

The Appalachian Field.

This is the oldest producing oil field in the United States, oil having been struck at Titusville, Pa., by Col. Drake in 1859. From that year until 1875, this field gave the entire American output of oil, and, until 1885, furnished 98.5 per cent of the total. It embraces southwestern New York, western Pennsylvania, eastern Ohio, West Virginia, Kentucky, and Tennessee.

The formations which yield the oil are of Devonian and Carboniferous age. The principal pools occur along the axes and flanks of anticlines and along terraces which tend to follow the general trend of the Appalachian Mountains. The reservoir rocks are chiefly sandstone, but to a minor extent, conglomerate, or even porous limestone.

The oils are for the most part of high grade, ranging from 25 deg. to 50 deg. Beaumé, and are mainly of a paraffin base. The maximum production was reached in 1900, when it amounted to 36,000,000 barrels. It is still in excess of 20,000,000 barrels per year, but the field has been pretty thoroughly developed except in Kentucky and Tennessee.

The Lima-Indiana Field.

This is the second oldest field in the United States, having been under development since 1884. The productive horizon is chiefly the porous dolomitic Trenton limestone of the Ordovician system, although in western Indiana, oil is obtained from Silurian and Devonian limestone and from the Chester group of the Mississippian. The dominant oil structures are terraces on the flanks of the Cincinnati arch, but some oil is obtained from porous lenses in limestone.

The oil is of medium grade (30° to 35° Beaumé) and is of mixed paraffin and asphalt base. Owing to the fact that it contains objectionable sulphur compounds, it must be subjected to a special refining treatment. The output of this field has been declining steadily since 1904, for which year it was 24,689,184 barrels. For 1918, the production was only 3,220,722 barrels. Except for certain areas in western Indiana which may yield small pools, the field is believed to be pretty thoroughly developed.

The Illinois Field.

This field includes the important pools in the southeastern portion of the state and a number of small, scattered pools in the central and western portions. Oil was discovered in important quantities in 1908, when 33,686,000 barrels of oil were produced. It has been declining ever since, and, in 1918, amounted to 13,365,974 barrels.

The oil varies from 28° to 40° Beaumé, has a mixed paraffin and asphaltic base, and generally contains sulphur though not in an objectionable form. Except for a few small pools which may be discovered in western Illinois, it is believed that the productive territory is now pretty thoroughly drilled.

The Mid-Continent Field.

This is the most productive oil field in the United States, and includes the eastern parts of Kansas and Oklahoma. It has been an important producer since 1904. The oil varies from low grade (27° Beaumé) asphaltic varieties to a high grade (42° Beaumé) paraffin type rich in gasoline and kerosene. Sulphur is present in some low grade oils, such as that from the Healdton field in such form as to require special treatment. The output of the Mid-Continent field increased rapidly until the end of 1918, for which year it amounted to 148,798,087 barrels. According to the estimates for 1919, the yield was only 115,897,000 barrels. There are large areas in this field which have not yet been tested by the drill.

The oil is derived almost entirely from the Pennsylvanian (Upper Carboniferous) formations, and occurs in anticlines, domes, terraces, and lenticular sands.

The North Texas Field.

This includes a number of scattered pools in northern and east-central Texas. With the exception of the Powell pool in Navarro County, which yields a very low grade oil (23° Beaumé), the oils are similar in character to those of the Mid-Continent field. Since the bringing in of the Electra pool in 1911, the importance of the north Texas field has increased rapidly. As a result of the recent discovery of the rich pools at Burkburnett, Ranger, Iowa Park, and other localities, North Texas has been the center of the greatest oil activities in the United States during the past year. The production increased from 17,280,612 barrels in 1918 to approximately 67,419,000 barrels in 1919. North Texas, owing to the large areas which have not been tested, offers great possibilities for the future.

The North Louisiana Field.

As a result of the recent sensational discovery due to deeper drilling in the Homer pool, the northern Louisiana field is attracting considerable attention at the present time. Oil is now being produced in Caddo, De Soto, Bossier, Red River, and Sabine Parishes. Most of the pools yield a high gravity oil (up to 42° Beaumé), but some give low grade asphaltic oil which contains sulphur. The discovery of additional important pools in northern Louisiana is anticipated as a result of the present activities, but the area holding out promise of production is not large.

The Gulf Coast Field.

This includes a large number of small, detached oil pools in southeastern Texas and southern Louisiana, which differ markedly from all other American occurrences in that the oil is associated with salt domes in Cretaceous and Tertiary strata. These tend to give a large flush production but decline rapidly. The oil is for the most part of low grade, ranging from 15° to 28° Beaumé, and much of it contains considerable hydrogen sulphide. The poorer grade product is used chiefly as fuel oil.

The Gulf Coast field first became important in 1901. The maximum production was reached in 1905 (36,526,323 barrels). From this time it declined until 1913, since which year it increased slowly until 1918. There appears to have been a slight falling off in production during 1919. New pools will undoubtedly be discovered in this field, but since they are very difficult to locate in advance of actual drilling due to the peculiar geological conditions, the future of this field is difficult to predict.

The Rocky Mountain Field.

This field includes producing territory in Wyoming, Colorado, and Montana, and prospective oil territory in Utah and New Mexico.

The petroleum is derived from Carboniferous and Cretaceous formations, the dominant structures being anticlines and domes, though small production is obtained from terraces and in rare instances from fractional shale.

Most of the oil of this field is of fairly high grade (32° to 48° Beaumé), although low grade asphaltic oils (18° to 24° Beaumé) are obtained from a few pools. Prior to 1912, the total annual production of this field was less than 1,000,000 barrels, but since that year it has been increasing rapidly, due to better refining and transportation facilities. It amounted to 12,808,896 barrels in 1918. Almost all of this came from Wyoming. The future possibilities of the Rocky Mountain field are great, due to the very large areas of possible oil territory in New Mexico, Colorado, Montana, and Utah, which have not been tested by the drill, and to the recent opening of valuable withdrawn areas in Wyoming to entry by the federal government.

The California Field.

California has produced more oil than any other single state. There are two important producing districts: (1) the San Joaquin and (2) the Coastal Division, both in the southern half of the state.

The productive strata range in age from the Upper Cretaceous to the Quaternary, but the source of most of the commercial production is the Tertiary beds. Oil occurs in almost every known variety of structure in this field.

Practically all the oil is low grade and asphaltic, but small quantities of higher grade paraffin oil are found in a few pools. The range in gravity is from 12° to 35° Beaumé. The maximum annual production was probably reached in 1914, when it amounted to 100,000,000 barrels. Most of the productive areas are believed to have been developed, although a few new fields will doubtless be discovered.

Summarizing the conditions in the several oil fields at the present time, we find that three (Appalachian, Lima-Indiana, and Illinois) are already on the decline with few possible new pools yet to be discovered, three (Gulf Coast, Mid-Continent, and California) are believed to have nearly reached their peaks, while three (North Louisiana, North Texas, and Rocky Mountain) are still approaching their peaks, which will probably be reached in all cases within the next ten years.

Manning expresses himself regarding the situation as follows: "What effort have we made to conserve this supply and to utilize it to its greatest advantage? We have made little effort until recently to do these things. We have been wasteful, careless, and recklessly ignorant. We have abandoned oil fields while a large part of the oil was still in the ground. We have allowed tremendous quantities of gas to waste in the air. We have let water into the oil sands, ruining areas that should have produced hundreds of thousands of barrels of oil. We have lacked the knowledge to properly produce one needed product without overproducing products for which we have little need. We have used the most valuable parts of the oil for purposes to which the cheapest should have been devoted. For many years the gasoline fractions were practically a waste product during our quest for kerosene; with the development of the internal combustion engine the kero-

sene is now almost a waste product in our strenuous efforts to increase the yield of the lighter distillates."

Possible Methods of Prolonging the Life of the Industry.

Up to the present few effective steps have been taken either by the states or the federal government to prolong the life of the oil fields, although this could be done without seriously affecting the industry. However, several possible methods of deferring the time of exhaustion of our oil supply have been proposed recently.*

These are as follows:

(1) By the discovery of new domestic fields.

(2) By the elimination of wastes in production.

(3) By the greater extraction of values.

(4) By the development of foreign sources of supply.

(5) By the development of the shale oil industry.

(6) By the development of substitutes.

To this list the writer would add:

(7) By the intelligent supervision of wildcat activities.

(8) By the testing of deeper sands in known oil territory.

Let us consider briefly the possible application of each of these suggestions.

The Discovery of New Domestic Oil Fields.

As has been previously stated the present great campaign of exploratory drilling results in the discovery of several new oil pools annually, but the proportion of new discoveries in the future will undoubtedly become less as the untested territory becomes smaller. It is not probable, therefore, that this measure will be effective for many years.

The Elimination of Wastes in Production.

As a result of recent investigations of the United States Bureau of Mines, it is estimated that owing to our wasteful methods of production from 30 to 90 per cent of the oil is left underground when a pool is abandoned or exhausted. Gilbert and Pogue consider that when the loss of the oil produced, due to poor storage facilities and wasteful methods of utilization, is taken into consideration, the total recovery may be as low as 10 per cent. The wastes in production are due primarily to careless drilling which frequently results in the infiltration of water into the oil sands, and to the uncontrolled escape of natural gas encountered while drilling for oil. It has been estimated that half the gas so encountered has been allowed to escape. Since gas pressure in the oil sands increases not only the daily yield but the life of the well, it should be maintained as high as possible.

Manning, referring to the enormous waste of gas in the Cushing field, makes the following statement:

"During the year 1913 it is estimated that in this one field in Oklahoma an average of not less than 300,000,000 cubic feet of gas was wasted daily, or more than 100,000,000,000 cubic feet of this ideal fuel was allowed to waste during the year. This is equivalent to about 5,500,000 tons of coal, and would have met the wants of nearly 1,000,000 families for one year. * * * All this gas was wasted in order to produce about 30,000 barrels of oil daily; in other words, at the prevailing price paid by domestic consumers for such fuel, gas worth about $75,000.00 per day was needlessly wasted to obtain a daily oil production valued at less than $25,000.00."

This does not take into consideration the loss due to the decreased yield of oil resulting from the lowering of the gas pressure.

Another possible method of preventing waste is to extend the practice of recovering "casing head" gasoline from natural gas. In many oil fields considerable gasoline is suspended in the gas. This may be recovered by compression, by absorption, by vacuum pumps, and as drips from gas mains. The yield of gasoline from natural gas has increased from 7,000,000 gallons in 1911 to 217,884,104 gallons in 1917, but the industry is capable of much further expansion.

The Greater Extraction of Values.

Gilbert and Pogue state that "improvements in value extraction from the petroleum output will come through the extension and further improvement of "cracking" methods of distillation; through improvements in the design and efficiency of the internal combustion engine; through the widening use of the Diesel type of engine, thus gradually deflecting fuel oil from its illegitimate role of a steam raising understudy to coal; and through a carefully planned program for building up a great oil by-products industry to give multiplications of value to the portion of oil left after the energy, light, and lubricating values are extracted."

* Gilbert and Pogue, Smithsonian Institution, Bulletin 102, Part 6.

The Development of Foreign Sources of Supply.

The exhaustion of our petroleum supply will undoubtedly be deferred for a number of years by the development of foreign fields, and the importation of large quantities of oil and its products. Very large undeveloped reserves are believed to exist in Mexico, Central America, and South America. Extensive exploratory work is now being done by geologists in these countries, and we shall undoubtedly learn something more definite regarding their oil possibilities in the near future. Our imports from Mexico at the present time supply almost one-fifth of our present needs.

Considerable activity is now being shown in wildcat areas in northwestern Canada, and important fields are predicted for that country, but it is doubtful if Canada will ever be able to do more than supply her own domestic requirements.

The Development of the Shale Oil Industry.

Within the past few years large areas of oil shale lands have been discovered and mapped by the United States Geological Survey in Colorado, Utah, Wyoming, Nevada, California, Montana, Arizona, Oregon, and in several central and eastern states. It is estimated that these oil shales are capable of furnishing sufficient oil to supply the country for several hundred years. The largest and richest single area lies in northwestern Colorado and adjacent portions of Utah and Wyoming. Much of this shale is said to be capable of yielding 50 gallons of oil, 3,000 cubic feet of gas, and 17 pounds of ammonium sulphate per ton. The Colorado shales alone underlie approximately 1,400 square miles with an average aggregate thickness of 53 feet, and are estimated to be capable of yielding 20 billion barrels of oil and 300,000,000 tons of ammonium sulphate.

The utilization of these bodies of oil shale, however, has been retarded by the difficulties encountered in the development of a satisfactory process of extraction of the oil, and also by the large initial cost of plants capable of treating the shale on a large scale. Small experimental plants are now in operation or under process of construction at several localities. If these are successful, the shale oil industry will be placed on a substantial footing, and its growth will be sure, though possibly slow, until the decline in the petroleum output coupled with the accompanying increase in price of oil and its products shall render the business

The Development of Substitutes.

There are several possible substitutes for gasoline for use in the internal combustion engine. The more important of these are benzol, a product of coke ovens, and alcohol. Inasmuch as neither of these will probably be able to compete successfully with gasoline because of their cost and other difficulties, they do not deserve serious consideration at the present time.

The Intelligent Supervision of Wildcatting.

An enormous amount of money and much valuable time are wasted each year by would-be oil operators who drill for oil in territory holding out not the slightest chances for success. In most cases these operators are not guided by geological advice of any kind. In others, the instructions of pseudo-geologists, who would not recognize an oil structure if they should by any chance come upon one, are followed. There can be no doubt that additional new oil pools could be opened up each year, and much money saved to innnocent investors if some sort of intelligent supervision of drilling were exercised by the states in which operations are carried on.

The Testing of Deeper Sands.

Experience has shown that some oil structures possess more than one productive horizon, and it is believed that deeper drilling in many oil districts will reveal the presence of large quantities of oil below the present "pay sands". The recent successful experiments in deeper drilling in the Ranger, Texas, and the Homer, Louisiana, fields, lend strong support to the advisability of this practice at those localities where the underlying formations are not known to be unfavorable.

In conclusion, it is believed that the present output will be maintained if not exceeded during the next few years, chiefly as a result of the discovery of new oil pools and the drilling to deeper sands in known oil structures in the Mid-Continent, North Louisiana, North Texas, and Rocky Mountain fields, and that a slow decline will then set in. This will result in a steady increase in prices of oil and its products, and will not only stimulate the shale oil industry and bring about greater activities in foreign countries and cause larger importations, but will also lead to more efficient methods of production and refining in this country under more effective government and state supervision. All these factors working together will serve to prolong the life of

DISCUSSION

A REPRIMAND.

Denver, Colo., December 13, 1920.

The Editor:

I was much interested in the September, '20, issue of the Alumni Magazine. I read with great interest a letter from Mr. Harold C. Price, class of '13; also the limited remarks by the editor. Mr. Price's letter states clearly what I think is the essential information that should be incorporated in the Alumni Magazine of the Colorado School of Mines.

I believe that the present editor of the Magazine should be both complimented and criticized for his work—complimented for the general arrangement, appearance and the untiring effort he has put forth on limited means, to make the Magazine appeal to the Alumni in general, as well as the advertisers in mining journals, but criticized for his apparent neglect to answer just such letters as Mr. Price's, within a reasonable time. I do not like to criticize until I have given the editor a chance to explain his position, for I feel that under the conditions there might be many influences which are being brought to bear upon him that might be shaping his policy. I, however, dislike to believe that such is the case.

I have awaited each issue of the Magazine to see if Mr. Price's letter would not be answered. Three months have elapsed and still no answer has been made. Can it be that we, as alumni, have to go to the technical journals to get the news we are after about our Alma Mater? We have, as an Alumni, a magazine which should give us the unbiased facts, not months afterwards, but while the metal is still hot. I ask, is the editor to blame, or are there conditions existing at the school which make him keep silent on such subjects? To get to the point: Is it not possible to have some information on the following, not from the national journals, but from our own publication:—

1st. Why did the Bureau of Mines have to move from Golden, Colorado, to Reno, Nevada?

2nd. Why do we not get some real information relative to the report of the American Association of University Professors?

3rd. Why is it that men employed as professors at our Alma Mater are reappointed from year to year, whereas our athletic coach is employed for a period of three years? Are we putting athletic ability at a premium over the standards of technical training? Is it a fact that athletic ability is to be rewarded more than technical training, moral character and other abilities which go to make up the essentials of a college professor?

4th. We have, at Golden, an experimental plant, the first object of which I have always understood was to offer the mining industry a plant where any kind of ores could be experimented with in car load lots. This plant has stood ten years, and I think it would take that long for a test to be made on a carload of ore in that plant. There are a great many thousand tons of complex ores in Colorado. Our state has just finished spending a large appropriation for finding out what these were. Why has it not been possible to have had this money expended at our experimental plant so as to determine some method of treatment?

5th. A session of the American Mining Congress was recently held in Denver. At this the School had an exhibit of "what was what" in oil shale. Several oil shale companies had exhibits showing pictures of the different apparatus used in the manufacture of shale oil. Many of these were taken at Golden and used in literature which borders on the "ragged edge of deception". In these prospectuses they do not set forth the actual facts of the technique. They prefer to let investors invest their money first and then find out that there is a long way to travel before the actual results can be accomplished in practice. This is done with the object of establishing an industry which will no doubt in time be a wonderful asset to the State in the development of its natural resources. If this industry must be given impetus by a lot of publicity issued by the School of Mines, let us as an alumni see that it is done with no disgrace to the high ideals of the School.

6th. Why is it that we cannot have more news regarding our different athletic teams?

I would like to see a real good comment in the editorial section of the Alumni Magazine on the above subjects.

Yours truly,

T. D. BENJOVSKY, '09.

Your criticisms have been carefully noted. I have anticipated being reprimanded by some of our alumni for my delay in replying to Mr. Price's letter and statement of facts relative to the removal of the U. S. Bureau of Mines and the report of the American Association of University professors.

I shall herewith present it in the form in which I have already prepared it. This will supply you with the major part of the information you desire. It will answer your inquiries numbered one, two, three and five. Your question number four is not entirely clear. You evidently are laboring under a false impression relative to the state appropriation. My subsequent remarks relative to the removal of the Bureau of Mines should clarify matters for you. This work was done at the U. S. Bureau of Mines station in Golden.

Relative to question six. The alumni readers, in general, are not interested in long detailed accounts of the games. All they desire is a concise statement of the results of the games and sufficient news to inform them of prospects and developments in the various lines of sport.—EDITOR.

A REPLY TO MR. PRICE'S LETTER.

In the September, 1920, issue of the Colorado School of Mines Magazine, there was published a letter from Harold C. Price, '13, remonstrating the Magazine for its failure to publish any statement of facts relative to the above affairs. Our silence, he inferred, makes it appear that the authorities at the School have no defense against the derogatory statements which were published in the Mining and Scientific Press, Engineering and Mining Journal, and Chemical and Metallurgical Engineering Journal, and that their assertions must, therefore, be correct. I concurred with Mr. Price in his inference and explained that I was absent in Central America at the time these incidents took place and that the acting editor, Robert M. Keeney, did not feel it his duty to make any comments because of his instructions that the general policy of the Magazine was to refrain from entering into a discussion of the administractive affairs of the School. This policy was adopted in order to prevent further ill-feeling between the Anti-Alderson and Pro-Alderson factions of the Alumni, which resulted from the controversies relative to the reappointment of former President Victor C. Alderson, in the summer of 1917. However, the time has arrived when it becomes necessary for the Alumni Association of the Colorado School of Mines to awaken to its duty, to stand up and fight for its Alma Mater's good name, or like men acknowledge her guilt and make restitution. To do this the Association must ascertain the **absolute facts** relative to conditions prevailing at Golden in order to refute or acknowledge the charges made by the American Association of University Professors and others. Note, I say absolute facts. By that I mean that it is time to stop compromising with the truth **because of political expediencies.** An investigation should be made by real men, free from prejudice and unafraid to speak the profound truth regardless of consequences—men whose ideals are dominated by the conviction "that the truth has no enemies save the ignorant or the corrupt."

The latter part of September I prevailed upon the President of the Alumni Association, Mr. Will H. Coghill, to call a meeting of the Alumni Association, at which time I would lay before the members the conditions prevailing at Golden, and thus invoke a discussion as to what would be the most expedient manner of remedying the fundamental defects at the Colorado School of Mines and replying to the editorial charges above mentioned. Mr. Coghill advised me that he was opposed to having a meeting at this time because he felt that the Alumni Association took so little interest and such a meeting would be of no avail. He insisted that it was better not to have a meeting but rather leave things take their natural course because there was sufficient political influence among the mining men in Denver to place the School of Mines under the regency of the University of Colorado. To have a meeting at this time he felt might hinder this legislation because there might be some opposition aroused. To this, I replied that this was all the more reason why it was imperative that we should have a meeting. For me to permit this agitation to go on without publishing any information relative to it would certainly lay me liable to severe criticism at the hands of the alumni subscribers of the Colorado School of Mines Magazine. They would certainly be infuriated to read that the School had been put under the authority of the University of Colorado without having been previously informed of the movement. I argued that if this is so desirable—I think those best informed feel that it is—that we could have a meeting and present evidence to this effect, which would result in our Association as a body endorsing the movement.* We were unable to reach an agreement, and I therefore told him that I would make a request amongst the members in Denver

* Further mention will be made of this feature in my conclusion.

for a meeting and thus over-rule his presidential authority. This I did. I told the various members of the executive committee in Denver that unless we had this meeting that I would give publicity to my statements and resign rather than be associated with an organization which would rather follow the path of least resistance than to exert some effort to determine true facts, because of the fear it may involve lots of unpleasant notoriety. The Executive Committee † then held a meeting and decided to hold another meeting later to appoint the various standing committees, as outlined in the Constitution. After this meeting was held, Mr. Hugh C. Watson, a member of the Executive Committee, called upon me and advised me that these committees would be appointed and in due course they would submit their reports, and that we would then have a "real" meeting. Mr. Watson said that to have a meeting immediately as I suggested, would not bring the results because the members would come uninformed. I concurred with this, and said that this would be satisfactory provided these committees showed diligence. Letters were sent out to the various members of the committees by William P. Simpson, Secretary of the Association, notifying them of their appointments, **BUT WITHOUT GIVING THEM INSTRUCTIONS.** As a result, three months have elapsed, and nothing has been done. I therefore feel it my duty as an alumnus of the School, to come out with a statement of facts. It is a particularly disagreeable task in view of the fact that in my testimony I shall have to speak the truth, perhaps to the embarrassment and disparagement of some individuals toward whom I bear no personal malice, but with whose principles I am not in accord.

If the Alumni Association is incapable of conducting such an investigation; if its members cannot lay aside their personal prejudices or withstand the purging effects of an acknowledgment of the truth, then, as an association, it is unworthy of further existence. Likewise the Colorado School of Mines, if it, as an institution of higher learning, cannot endure such an investigation, it should be closed rather than to further pose as a scientific school, when her ideals would be incompatible with the very meaning of the word science: "the pursuit of knowledge or truth for its own sake".

† Messrs. W. H. Coghill, W. P. Simpson, E. R. Ramsey and H. C. Watson.

The Removal of the U. S. Bureau of Mines from Golden.

Little can be added to what has already been said in accounts and editorials which have appeared in the various technical journals relative to this unfortunate affair, whereby the State of Colorado is deprived of its station of the U. S. Bureau of Mines. It will be remembered that the Board of Trustees had acting President I. A. Palmer ‡ advise the officials of the local station of the Bureau of Mines to the effect that they needed the building now occupied by them to meet the growing needs of the School, as well as to provide additional facilities for the new courses in chemical engineering. He suggested that the Bureau change its quarters to the experimental plant. Anyone familiar with the present location of the Bureau in the Hall of Engineering and the contrast in facilities available at the testing plant, can readily appreciate why the Bureau of Mines decided to move. The whole affair is the outcome of lack of tact and appreciation of the work done by the Bureau of Mines on the part of the Board of Trustees. President of the Board of Trustees Lewis B. Skinner, openly stated that the only research work that is really worth while is that done by a commercial organization; that is, by "factory methods".¶ Another trustee, W. D. Waltman, has also expressed himself to the effect that he has little regard for the work done by the U. S. Bureau of Mines. In short, these dominating personalities on the "Board" felt that the Hall of Engineering could be more efficiently utilized for the growing needs of the School. A day or two before this letter was written, a delegation of the trustees paid a visit to the Bureau of Mines, and went through the building, ostensibly for the purpose of seeing what work was being done. No hint was given as to the real intent. You can, therefore, readily understand why men of the calibre of those associated with the Bureau of Mines should resent the insult of the subsequent letter. Had the Board of Trustees discussed the matter with the officials of the Bureau, undoubtedly some agreement could have been reached. Part of the work might have been transferred to the experimental plant and a smaller building might have been erected for office facilities. But no, Mr. Skinner is not accustomed to using other than factory methods (those involved in giving orders to an inferior), and hence did not realize that different methods must be used in dealing with equals.

‡ President Alderson was absent in Europe while this took place, and hence the blame must not be laid upon his shoulders.

¶ Before Mr. Skinner criticises the research work done by the U. S. Bureau, he had better investigate the character and amount of the work done by the School of Mines Department of Research at the Experimental Plant.

No one doubts the fact that perhaps some of the work of the Bureau of Mines might be done more efficiently. But who can place research work on an efficiency basis? The purpose of the Bureau is to investigate scientific principles and put the information obtained in such shape that it can be used by the "practical man". As an outcome of this, they have discovered several principles which have been the basis of commercial operations, to-wit: their contributions to the radium industry, the uses of mesothorium, flotation, the Caron Process, and many others. The success of the U. S. Bureau of Mines is so generally admitted that this point needs no further comment here.

To start with, it might be well to call attention to the animosity entertained by the officials of the School toward the Bureau of Mines. According to the agreement entered into between the School of Mines and the Bureau of Mines, the work was to be done on a cooperative basis between the staff of the Bureau and the faculty of the School. This was impractical because the faculty members were so heavily taxed with routine work that they were unable to contribute their part. This year the State Legislature appropriated $15,000.00 for the purpose of joint research between staffs of the School of Mines Experimental Plant and the Bureau in solving the complex ore problems of the State. Mr. Robert M. Keeney, Director of the Experimental Station of the School of Mines, was away for several months at the time engaged in private consulting work while this work was going on, and hence the Bureau of Mines decided to outline the work without the inconvenience of attempting to cooperate with an absent director.* This action on the part of the Bureau engendered considerable ill-feeling. However, circumstances justified it. There were only six or seven months left in the year to do this work and, therefore, no time could be lost. Are the authorities of the School justified in hiring a man on a half-time basis? It

* According to the terms of Mr. Keeney's contract with the School, he is paid a salary of $3,000 for half his time. He has the discretion as to which half he gives the School. He is therefore privileged to be absent to attend to outside work.

makes school work of secondary consideration. We hold no grievance against Mr. Keeney for his good fortune. The salary paid him for the work he does is out of all proportion to that paid to the members of the faculty.

The very fact that the Bureau of Mines was immediately offered the facilities of two other institutions should be sufficient evidence to show that their work is not entirely unappreciated even though the Board of Trustees think to the contrary. Factory methods of research have their place, but if it were not for organizations such as the Bureau of Mines, which disseminate scientific knowledge, where would the free-lance engineers, the smaller companies, and the public in general get their information? Surely not from the advocates of factory methods, where secrecy is the watch-word. May I ask also, if the work of the Bureau of Mines is so valueless why so many who bear this opinion are the first to secure a copy of their latest bulletin pertaining to work in which they are interested?

The truth is that the State of Colorado and the School of Mines have suffered a distinct loss because of the removal of the U. S. Bureau of Mines. Their loss has been the University of Nevada's gain. The Bureau has its new quarters at that institution at Reno. In addition it is a sin against the public to waste so much time and money in disrupting this work, especially in view of the fact that it could have been avoided, had the Board of Trustees exercised a little discretion.

We wonder whether the Board of Trustees are justified in installing a new course of chemical engineering in this institution, which is intended especially for a mining school. This seems an additional waste of public money because the State has already provided courses in chemical engineering at the University of Colorado. This action savors as being solely the machination of Mr. Skinner's bigotry. In his characteristic super-positiveness he has advised some of his friends that mining is a thing of the past compared to the industrial chemical field, and that the course of instruction at Golden should be amplified to meet the changed conditions. No open-minded person doubts the attractive industrial chemical possibilities, but it is a debatable question whether or not the school should abandon its traditions upon the judgment of one man.

Report of the American Association of University Professors.

Let us now briefly review the Report of the American Association of University

Professors. This Association occupies a position in the educational world analogous to that of the American Institute of Mining and Metallurgical Engineers in the mining world. Its membership numbers 3,500. In October 708 new members were elected. Its membership includes the prominent professors of practically every institution of the higher learning in the United States. In order to be eligible for membership one must have taught at least five years and have attained a professorial rank. The Association endeavors to protect, foster and perpetuate the highest traditions of the science of education. One has but to peruse a few of its monthly bulletins to appreciate the high standard of the organization. This investigation was made for the purpose of determining the defects in the administration of the Colorado School of Mines whereby the school is constantly in turmoil, which is not conducive to rendering its best service to education.

It will also be remembered that this investigation was made at the request of three members of the Association who were members also of the faculty of the Colorado School of Mines, two of whom were dismissed unjustly without sufficient cause or warning [Dr. H. B. Patton,* for twenty-four years Professor of Geology-Mineralogy, and Prof. C. R. Burger, for ten years Professor of Mathematics], and the third, Dr. Herman Fleck, head of the chemistry department, who had resigned his position in 1916, after having been professor for thirteen years. These members have the right to appeal to the Association for investigation. This investigation was made by some of the most prominent members in the teaching profession, and it was not directed at any individual, as some, improperly informed, contend; but, only insofar as these individuals are responsible for the defects in the administration.**

The following are the charges made:

1. Interference of members of the Board of Trustees in Matters of Discipline.

2. Cause of the Dismissal of President Parmelee.

3. Dismissal of teachers without charges, hearing or adequate warning.

4. Lowering of Standards of Scholarship by President Alderson.

5. Exercise of improper pressure by President Alderson to cause teachers to support his policies or further his personal interests.

The summary of the Report of the American Association of University Professors reads as follows:

The above evidence leads the investigating committee to conclude that the first four of the five charges made by the complainants are sustained, the evidence as to the remaining charge being inconclusive.

1. The evidence shows definitely, with respect to President Alderson, that he is mainly responsible for the dismissal of strong teachers of professorial rank and of long service from the Colorado School of Mines without charges, hearing, or adequate warning; that he lowered the standards of scholarship of the institution by compelling members of the faculty to change grades of students, especially of those who had influential relatives; and that, in general, he repeatedly violated the essential principles of sound educational administration and of professional ethics. He shares with the Board of Trustees the responsibility for the grave injury done to the character of the school, to its standing, and to its usefulness, during his administration.

2. The evidence shows that individual members of the Board of Trustees weakened the authority of the faculty by interfering with matters of student discipline; that some of the Trustees, and notably Mr. Rubey and Mr. Smith, have encouraged the students in disrespect for authority; and that President Parmelee was dismissed chiefly on account of the firm attitude he took in resisting interference on the part of the Board with the faculty's responsibility for maintaining discipline and proper educational standards.

The Trustees of the Colorado School of Mines do not seem to realize the impropriety and the evil influence of their interference in the routine affairs and educational problems of the institution. To the sworn and detailed statements of former professors in the School of Mines the Board opposes an uncandid and evasive reply, which in effect admits the gravest of the charges as if they were of no serious importance. The Trustees' disregard of the rights and responsibilities of the teacher has reacted most injuriously upon the institution which the people of Colorado have committed to their care.

Reasonable security in tenure of office must be assured to the college teacher. The interests of the country require that men who have given long and faithful service and who are still admittedly competent should not be dismissed at the whim of a tyrannical president. The interests of the students require that the college teacher be independent enough to stand for what is right in discipline and in standards of scholarship, as well as in athletic control.

The public press has recently reported the following resolution passed by the Board of the Colorado School of Mines:

"Resolved, that loyalty to the institution, to its ideals and to those connected with it, will be considered of the utmost importance, and that, even though ability and attention to duties are marked, any member of the faculty or other employee who attempts to undermine the school or to advance personal interests at the expense of his colleagues or the school will not be retained."

This declaration of purpose requires no comment; no one acquainted with the previous methods of the Board can have any doubt as to the future course of action which the resolution foreshadows.

The conditions which were brought out in this investigation, unless remedied without delay, will prove most disastrous to the future of the school. To attract and to retain teachers of superior qualifications, an institution must protect them from administrative tyranny and from interference with their professional functions and responsibilities, and must maintain such standards as will permit men of character to enter and to remain in its service without loss of professional self-respect. This can only be accomplished if the authorities of the State of Colorado will appoint trustees who are competent to select and to support a president who has the proper educational ideals.

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Before this report was published all the evidence contained in it was submitted to the Board of Trustees in order to give them an opportunity to refute the testimonies. Their replies are included in this report. They clearly indicate the self-exalted and narrow viewpoint of the board. Their attitude was like that of a super-egotist, who considers himself beyond reproach, and sneers at the very idea of any one being so presumptuous as to even entertain a critical thought about him. Because of this attitude they have tacitly admitted the correctness of the charges, in addition to inviting the condemnation of the educational world.

It is inconceivable how the board should dare ignore an investigation made by such prominent men as those whose signatures are attached to the above report. M. F. Libby is one of America's most widely known philosophers. He is at present professor of philosophy at the University of Colorado. Herbert S. Hadley is professor of law at the same institution. He is the well known ex-governor of the State of Missouri, who is at present one of Colorado's most influential citizens. He is also noted for his vigorous attacks in court against the large trusts, such as the Standard Oil and the Harvester Co.; a man of irreproachable integrity.

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I wish to add the following comments relative to these charges:

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Charge No. 2. President Parmelee should have been upheld in his decision and not dismissed to settle the matter to the satisfaction of the striking students. I personally believe that President Parmelee chose an inopportune time to enforce discipline. He certainly must have known of the tradition of "wrinkling" and of the tendency of the students to indulge in rowdyism on student festival days. From an attitude of extreme leniency to that of utmost severity was too unexpected to be a just action. The students should have been forewarned and discipline gradually enforced. Perhaps President Parmelee is not to be entirely blamed for this apparent lack of tact because he was a new President and hence not thoroughly conversant with these traditions. He was acting upon the advice

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of faculty advisers, who betrayed his confidence in that they stated that such disorderly conduct as had occurred on this occasion had never before been known. This is lamentable, because it is a known fact that professors have been "wrinkled" in the past. But I maintain that once President Parmelee had enforced discipline that he should have been upheld by the Board of Trustees. It was a conflict between administrative authority and student disrespect. Had the trustees upheld President Parmelee, the incorrigible traditions of rowdyism at Golden would have been dealt a severe blow. The students of the future would have had instilled into them the proper respect for discipline and their superiors; the school authorities held the trump to the situation; they could have advised the striking students to stand by their decision. If they did their school days would be ended because the school would absolutely refuse to honor any of their credentials without which no reputable school would admit them. As it is, the students have had another precedent to encourage them in their disrespect for "law and order".

Let me here supplement this by commenting upon the conditions and events following the dismissal of President Parmelee.

The action of trustees Rubey, Smith and Carleton in "conspiring" with Dr. Victor C. Alderson to bring about his return was certainly disgusting. They undoubtedly felt that they were obtaining the best man available because none of the desirable condidates with whom they were negotiating for the presidency would accept the chair. They certainly must be admired for their brazenness. Any man of average intelligence would have realized that Dr. Alderson was not the man for the position. The very fact that he was ousted four years previously should have warned them that they were inviting future turmoil. This very decision on their part shows their absolute lack of personal honor and qualification for the position of trusteeship. Their procedure had all the appearance of the machinations of a political gang.

Mr. H. M. Rubey is a local banker whose interest in the School of Mines is secondary to that concerning the welfare of Golden. He is, perhaps, a good business man, and "a hale fellow well met", but a man not trained in that which constitutes the highest standards of scholarship. There is always the danger that a local trustee leans to the belief that the more students there are at Golden the more prosperity it brings to the city, and therefore incidentally to himself. The very fact that he uses every influence he can to secure his reappointment to this trusteeship, suggests an ulterior motive, because surely no man would strive for this position for the questionable honor involved.

Captain James T. Smith, we know, is a kindly old man, but in this instance, he did not exercise good and independent judgment. He has been continuously reappointed to the Board as a matter of habit. I shall show proper respect to his years and not subject him to any further criticism. I shall, however, ask you to refer to some of his writings which he published in the Rocky Mountain News in order to advertise the School of Mines' fame.*

Mr. A. E. Carleton, the other trustee in the "conspiracy", scarcely ever attended any meetings. He was too busy a man with business affairs to be bothered with the trusteeship. He was virtually unacquainted with the real issues at stake, and merely voted with trustees Rubey and Smith to form the majority so as to settle things as quickly as possible; in the path of least resistance as it were.

Had Dr. Victor C. Alderson shown the delicacy which the position of college president demands, or even if he had had one iota of respect for the dignity of his position, he never would have accepted the reappointment in view of the open opposition of two out of five trustees, Orvil Whitaker and Frank G. Willis, two men rarely qualified for the trusteeship. Governor Julius C. Gunter, who was at the time president ex-officio of the Board of Trustees, also protested against his return. Compare this sort of an appointment with the appointment of a president of a reputable institution. A man who allows himself to be elected in this manner is not of the calibre required for the exalted and highly morally responsible position of president of an educational institution where such methods are pernicious examples and out of place. Dr. Alderson saw in his reappointment a chance to get back into power, to seek revenge—this he certainly did in the wholesale manner in which he caused the removal of professors—and to regain a point of vantage in future business transactions. He does this by a very clever scheme of advertising and posing, using the name and reputation of the Colorado School of Mines for a background to make him appear real.

Let us briefly review the career of Dr.

* See article on page 231 of this issue.

V. C. Alderson and of his works at Golden. Dr. Alderson is a graduate of Harvard, having received the degree of A. B. in 1885. In 1903 he received the degree of D. Sc. from the Armour Institute of Technology and Beloit College. He was Professor of Mathematics in the Englewood High School, Chicago, from 1887 to 1893, and Professor of Mathematics from 1893 to 1898 in the Armour Institute of Technology; Acting President 1898 to 1900, and Dean from 1901 to 1903, when he was appointed to the Presidency of the Colorado School of Mines. He held this position until 1913, when he was ousted as a culmination of years of turmoil. From 1913 to 1917 he was engaged in various mining ventures. It is obvious from his record above, that he has had practically no mining experience other than he has obtained by a process of absorption while President of the Colorado School of Mines. It is certainly unethical for one in his position to usurp the title of "Consulting Mining Engineer" when he has not earned a degree, and is by fitness and experience unqualified. His activities from 1913 to 1917 were mostly in unethical promotions and examination work, which had been previously criticised and brought to light at the time of his re-election to the presidency of the Colorado School of Mines in the summer of 1917. These would have disqualified him had it not been for the political aspect of the reappointment.

Many of the alumni members look upon the large student body at Golden this year as the work of Dr. V. C. Alderson. This may in part be due to the extensive advertising campaign that the School has organized, but it is more largely due to the fact that with the cessation of the war there has been an influx of students (accumulation of three years' students). If anyone will peruse the records of any other institution he will note that this is a common condition. Also, the School has been very liberal in the matter of scholarships,† which has brought a large number to the school. Therefore, it is not true that Dr. Alderson is responsible for this large student body, as many of his friends advance as a strong argument for his ability. It is true that he is a capable politician and that he spends more time seeking favors with influential outsiders than he does to cultivate the friendship and learn the strong and weak points of his faculty. It is true that during his administration and due to his activity the School has obtained some of its buildings and experimental plant—the last of questionable value. But what do bricks and mortar amount to when the "soul" of an institution is lacking? The faculty makes an institution and not the material equipment—although the latter is a valuable adjunct. It might be well to add that in this respect Dr. Alderson is a "has been". He may have had ability in the past to secure favors from the legislature, but since his return in 1917 practically every appropriation that he advocated has been defeated because of the contempt in which he is held by the majority of the influential mining men of the State.

† The following scholarships are given:
1. To all honorably discharged service men.
2. One to each State in the Union to the pupil recommended by the State Superintendent of Schools.
3. One to each accredited high school in the State of Colorado.
4. Five to those recommended by the Colorado Labor Education Association.
5. One to each Latin-American country; to each Canadian Province; to Cuba; to Porto Rico, and to the Philippine Islands.

But what reply have you to make to some of the distinctly unethical and unprofessional practices resorted to by Dr. Alderson? The October, 1919, Quarterly of the Colorado School of Mines, devoted to the Oil Shale Industry, is a masterpiece of plagiarism; that despicable practice of stealing knowledge from others and utilizing it as though it were original. His latest book on the Oil Shale Industry has been criticised by the Technical Press for its unfounded optimism and misstatement of facts.*

Dr. Alderson has played into the hands of promoters (not of the highest type), and has endeavored to foster this budding industry. He has published statements of questionable scientific accuracy. In this book he discusses some of the retorting and refining problems as though he were skilled in the art, when in reality he is merely repeating what someone else had written. The primary object of his writing the book was to advertise Victor C. Alderson in a favorable manner so that he would have people think that he was an authority on this industry. He is an authority when it comes to being an encyclopedia of current information of such a character common to newspaper reporters who gather information they hear without fully understanding the technic involved. Dr. Alderson is a well-read man, a clear thinker and an able writer, but what right has he to advise people of technical problems when he is not qualified by experience or fitness to do so?

It is true that Dr. Alderson is giving

* Refer to editorial in September 25, 1920, number of the Mining & Scientific Press.

the oil shale industry stimulus and intimately associating the name of the Colorado School of Mines with its development. This is commendable. Those informed on the subject of oil shales fully realize the eventual success and importance of this industry, but they are also aware of the innumerable problems which must be solved before this time arrives. I maintain that the president of any technical school is jeopardizing the reputation of the institution to attempt to write comprehensively on a subject when so many of the vital issues are as yet but "half-baked" facts. Already experimentation has disproven many of the statements in Dr. Alderson's book. The industry is destined to ultimate success, and it is certainly inadvisable for one in his position to promulgate any but well established facts. The industry is liable to be given a set-back if initiative is based on partial truths. The public look forward to the data published by the Colorado School of Mines as being authentic. What will be the reflection a short time hence when the true scientific facts become known?

Dr. Alderson is permitting unscrupulous oil shale promoters to use the school's experimental facilities for the installation of their demonstration plants. These plants are run a few hours at a time, and if "the wheels go round" while the spectators (presumably prospective investors) are present, the run and process are acclaimed a "proven success." One has but to refer to the advertisements of these promoters to realize the purpose for installing their plants at the Colorado School of Mines. It gives them a background to make them appear genuine—a subtle endorsement as it were. It also gives the School a lot of cheap advertising.

I called Dr. Alderson's attention to the unethical advertising (see advertisements of Porter Finance Company in various issues of the Shale Review or the Railroad Red Book. Notice exaggerated statements based on insufficient experimentation), and of how the public think that these companies are reputable, or would not be permitted to work at the school. He informed me that the experimental facilities are available to the public, and that as long as any individual fulfills the items set forth in the contract agreement, which the school demands, that it is not any of the school's business how he conducts his outside business; that is, it makes no difference to them where or how he obtains his money, or whether he has two wives instead of one. I dropped the matter in disgust.

Likewise, he is acting as consulting engineer for the Victoria Mining Company, which is operating some silver mines near Boulder, Colo. He has been using the School's chemist to do his private assaying for this company.

Let me ask Dr. Alderson how he dares to do all this outside work, when in August, 1918, he refused an applicant the position of chemist at the experimental plant. He will remember that this applicant was honest enough to state the reason for wanting the position and assured Dr. Alderson that he would attend to the school work first and do his own research work when time permitted, after regular hours, if necessary. He was refused the position because the Doctor felt that if he permitted this he might lay himself liable to personal criticism. It might also be mentioned that at the present time the staff at the experimental plant are all doing outside work in regular hours, and that apparently the school work is of secondary consideration; but these individuals, you understand, are members of "Dr. Alderson's clique."

May I ask, why is it necessary for the head of the School of Mines to be absent over half of his time during business hours? It looks very much as though the President of the Colorado School of Mines is but a side issue compared with his activities in the oil shale industry.

Why have a president at all, if it takes so little time to fulfill the duties of that office? If Dr. Alderson would spend more time on duty perhaps the School of Mines would be a fit place for a mother to send her son. At the present time the amount of drunkenness amongst the student body is appalling! There are several students at school who are not fit morally to be here because of their bad influence in demoralizing some of their younger or more easily enticed colleagues. These men manufacture intoxicating liquor out of "sweet spirits of nitre" and various patent medicines. Some of the latter are used directly for their "kick." At the town dances some of the Mines students are brazen enough in their inebrity to appear on the floor in the presence of ladies. It would be interesting to learn where these intoxicating materials are purchased in town. There are some resorts in and about town which even to the most casual observer, are evidently not places where one would take his sister. Surely the town officials are aware of their presence. Let Dr. Alderson, also, explain his "sweet blindness"!

Dr. Alderson unquestionably feels that his position at the Colorado School is very insecure and that sooner or later he will again be removed. He, therefore, is doing all he can "to make hay while the sun shines." It would be interesting to know with how many oil shale promotions he is identified. Also who paid the expenses of his trip to Scotland?

It is time that the authorities of the State took cognizance of these facts and removed this impostor to prevent him from further prostituting the name of the Colorado School of Mines to achieve his personal ulterior motives. It is said that the present board of trustees support President Alderson because no suitable candidate will accept the position. If conditions are as deplorable as this, it is time that steps were taken to remedy them.

Charge No. 3. Relative to the dismissal of professors without charge, hearing or adequate warning. Immediately upon reading some of the testimony in this portion of the report, the reader knowing some of the professors who have been discharged and whose cases are herewith discussed, immediately says: "Professor So and So should have been fired long before he was". Quite so, many of the professors in question should have been relieved long before they were. The Association, not knowing the personalities involved, had to accept the testimony merely from the basis that, if the man in question was a professor, he assuredly should not have been discharged in the manner prevalent at Golden. After a man has taught and attained the rank of professor he should be entitled to the courtesies and honor which the title should imply. Unfortunately at Golden, especially under the regimé of Dr. Alderson, these titles were attached to instructors more or less promiscuously. Frequently these men were merely carried because of compatibility to the presidential policy, given their titles and dropped when circumstances dictated a change, just as one would discharge a common laborer. The title had no more significance, in many cases, than that assumed by a rowdy proficient in pugilism, nor the title of "mining engineer" which Dr. Alderson himself has usurped.. The fault lies with the loose method of choice employed by Dr. Alderson in selecting faculty members, in the first instance. However, many able men were also dismissed, as the charge states.

The various Boards of Trustees, in the past, in discharging professors, were too "magnanimous" to render specific charges against the professors when they were dismissed. They felt that the less was said about the matter the better it would be for all concerned.

One of the first principles of education clearly involves this point under "Academic Freedom". The first year or two of a teacher's life is one of probation. If he makes good he is gradually promoted until he finally earns the coveted title of "Professor". For this he has sacrificed pecuniary gain in order to become a teacher whose greater pay is derived by virtue of the academic freedom which his work involves. To be dropped like an unworthy laborer is certainly not consistent with the highest traditions of education. It is a mark of warning to his colleagues which breaks down efficiency and breeds dissatisfaction.

Charge No. 4. I personally know of Dr. Alderson's playing favorites and being lenient towards sons of influential citizens in such a manner as to lower standards of scholarship. His ability to play politics is one of his greatest assets.

Dr. Alderson's method of looking over examination papers, and appending his "Good, V. C. A." and "Too Low, V. C. A." is well known to all of us. It may be considered commendable in that it impresses the student that the President is personally interested in his scholarship. It also, incidentally enables Dr. Alderson to judge the efficiency of the student in English. But it is an insult to the instructor to have a man make comments relative to the grades on his quiz papers, when the individual is ignorant of the subject matter. It is sheer mockery.

When Dr. Alderson was reappointed to the presidency in September, 1917, one of his first actions was to reinstate the students who were expelled during the strike, without the consent of the faculty.

I personally know of instances where Dr. Alderson has side-stepped an issue when it involved standing up for a principle, to-wit: About a year ago he allowed a holiday after the students had taken it without his prior consent.

Charge No. 5. Exercise of improper pressure by Dr. Alderson to cause instructors to support his policies, etc. Dr. Alderson is certainly guilty in this respect. This should follow axiomatically from his known political ability. He is a keen student of human nature and knows how to "rub the fur the right way" in order to win over those who dislike him. This in itself is admirable, but for the ulterior political motives involved it is certainly improper. Some of his strongest supporters have been won over by his system of ingratiation. By thus winning over those adverse to his principles, he reduces them

to impotency. They have sacrificed principle for favor. Hence they are unable in a future controversy to testify to the truth because their consciences will not permit them to commit that great inhuman sin of ingratitude.

At this time it might be well to call attention to how he won over the trustees Waltman and Skinner. W. D. Waltman, one of the present trustees, personally told me when he was elected that, if he could have his way he would pay President Alderson the salary due him, according to the terms of his contract, in order to displace him, because he felt that the sooner the School got rid of him the better. Why is it that a man should make such statements and then openly support the President in every controversy? Likewise with trustee Lewis B. Skinner. He was appointed to the Board by his friends who knew of his adversity toward Alderson, and thinking that he would use his influence to rid the School of him. In 1917 Mr. Skinner opposed the reappointment of Dr. Alderson, thereby tacitly accepting the charges which exposed him. What explanation has he to offer for his changed attitude? An explanation is due those who endorsed his appointment as trustee. With both of these men, Alderson apparently played up to their "greatness" and by his unique system of flattery and entertaining (ingratiation) he has won them over. This doesn't show especial strength on the part of Dr. Alderson, but rather weakness on the part of these trustees.

Conclusions.

I am sure that if our graduates really realized the gravity of the situation that they would not be so indifferent to this report and would not sanction the attitude taken by the Board of Trustees. The Board of Trustees have maintained that they are legally appointed by the Governor to the trusteeship of the School of Mines and that they therefore are alone responsible for its administration, and that no outside organization has any business to meddle into their affairs. This attitude clearly stamps the self-exalted opinion and narrow-mindedness of the Board of Trustees. By their attitude they have virtually ostracized the Colorado School of Mines in the eyes of the educational world.

Conditions are fundamentally wrong at Golden, first, with regard to the system of appointing trustees. The present system of appointments by the Governor places the administration of the Colorado School of Mines in politics. Occasionally good men are appointed to the trusteeship, but more frequently they are not. A study of the personnel of the trustees during the past will confirm this statement. Likewise the fundamental policy of hiring professors on a contract basis is equally bad. They are usually given a year contract and reappointed at the end of the year upon the recommendation of the President. This clearly gives the President tyrannical power which is not conducive to getting the best type of teachers. In the past we have lost many of our best men because of this feature. You can imagine yourself in the position where you are not sure at the end of each year whether you will be retained for another, especially if some occasion has arisen during the year in which you have invoked the wrath of the President. One of the fundamental principles of education involves this point. A professor, after he has made good, should feel reasonably secure in his position. Of course, if a professor is incapable he should be dismissed after the first year and not retained or actually promoted, as has been done in the past. Under the present system and condition of affairs at Golden, it is impossible to "attract and retain superior teachers". When a vacancy occurs in the faculty, it is almost impossible to secure trained teachers from other institutions who ordinarily would be delighted with an opportunity to teach in a school of this specialized character. Instead, it is necessary to resort to employment agencies. It is proper to use these agencies perhaps for securing instructors, but it should not be necessary for assistant professors except in emergencies. Thus men are obtained with little or no teaching experience or of unproven ability. This is a dangerous policy as well as being unfair to the students. Occasionally a man obtained in this manner qualifies, but, as experience has shown, more frequently not. We have some very able instructors at Golden, but almost without exception these are here as a temporary expediency—they are waiting an opportunity to get out; or are attracted by the ideal location and climate of Golden. You have but to read the "Loyalty Resolution" (see page 225), which was passed by the Board of Trustees last year, to substantiate these assertions. If it were not for temporary expediency do you suppose these men would have tolerated such an insult? They attempted to instigate proceedings to demand that the trustees rescind this resolution, but through lack of co-operation on the part of two colleagues (especial favorites of Alderson), whom they feared would betray the movement, nothing was done. To this day, this is a sore spot in the hearts of most of the professors. This resolution is a dangerous doctrine. It has been assiduously spread as a bludgeon to maintain discipline. This is a stupid ruling which confuses loyalty to the administration with loyalty to the School. It is high time to stop such nonsensical propaganda and to consider the possibility of disloyalty to the School resulting from the support of an administration which is itself disloyal to the School and its traditions.

Board of Trustees you are hopelessly lacking in decency and common sense. Do you suppose you can obtain true loyalty by coercion? Never! Loyalty is inspired not instilled. If you or your President were the right sort of men, such legislation would be unnecessary. You insult your faculty and make them lose their self-respect, whereas your janitors and other school employees are protected from your tyrannies by virtue of the Civil Service Commission.

Conditions are fundamentally wrong at Golden and require immediate correction. The present system of trusteeship by appointments made by the Governor, has had a long trial and been proven a failure. The reason is because of the difficulty of selecting men of the proper character—men free from local prejudice—who possess the proper educational ideals. The only immediate solution lies in placing the school under the authority of the regency of the University of Colorado. If this is done, you will then be able to secure the services of a proven executive for president, and you will be able to attract and retain efficient teachers from other universities. Some will object to this because they imagine this would result in the Colorado School of Mines losing its individuality. This suspicion is born of ignorance, many of the other schools of mines are under the authority of their state universities, and yet they have retained their identity. Others in all honesty maintain that the regents are virtually political appointees; they are elected by the people instead of being appointed by the governor, as are the trustees. They, therefore, cannot see how this would remove the influence of politics. Experience has shown that this system works, just as it has shown that our system is a failure. The reason is that the people have a voice in the selection of the regents. If undesirable candidates are nominated, the alumni of the various schools have an opportunity to organize an effort to bring about their defeat.

We would suggest that all the State's schools be put under one board of regents, thus all prejudices would be appeased and many economies could be effected which would accrue to the benefit of the State.

I have attempted to speak the truth regardless of consequences. I have called "a spade a spade", because I felt that any half-hearted statement of facts would fail to arouse the association from its lethargy. The reason for this indifference is quite evident to one from within—conditions at Golden are so nauseating, and the school has received so much unpleasant notoriety of late that they hate to have a hand in the affair. The hour has arrived when the association must either stand up to attain the ideals for which it was formed, or else disorganize at once. I fully appreciate the value of the Association in this regard as well as a means to enable the graduates to keep in touch with one another, and the school's activities, so as to perpetuate the memories of their school days, as it were. It was from these motives that I assisted in reviving the Alumni Association in January, 1919, and later took over the editorship of the Magazine. There is not sufficient compensation to make it worth while to do this work, and if it were not for the fact that I have sufficient outside activity to keep me busy, with which the Alumni Association work does not interfere, I could not have afforded to have done this. If the Alumni Association can not unite in an effort to bring about these fundamental changes, I cannot further sacrifice my self-respect to be identified with it as editor of its Magazine or as its Assistant Secretary-Treasurer.

C. ERB WUENSCH.

A SAMPLE OF THE BOMBASTIC ADVERTISING

Distributed from the Colorado School of Mines Booth During the Recent Independent Oil Men's Convention.

By Capt. Jas. T. Smith.

(From the Rocky Mountain News, Denver, Colorado, August 1, 1920)

Mine School's Fame is World Wide.

The standard of an institution for higher or special education—more especially a school of applied science—is best measured not by the envy of its would-be rivals, but by the demand for its output. Measured by this rule, the fairness of which cannot be successfully questioned, the Colorado School of Mines (International), is today at the very peak of its world-wide reputation.

Graduation May 10th.

The class of 1920, which was graduated May 10th with Director General Barrett of the Pan-American Union as the orator of the day, has been favored with a demand from employers—both corporate and individual—far exceeding the experience of any other class, and which we venture to suggest, is not matched by the experience of any other college in America.

In 1917—the year which marked the return of Dr. Victor C. Alderson as president of the faculty—the class of 1920 had ninety-three members in its freshman or "green cap" form. Of that number, partly owing to the demands of the world war and partly due to the requirements of an enlarged and exacting curriculum, reasonably enforced, only thirty-nine members received the degree of engineer of mines, or the equivalent degree of metallurgical engineer. This was 43 per cent of the class that entered in 1917. At West Point or Annapolis, from 55 to 60 per cent of the entrance class make the course, which, like that of the Golden School, is mainly based on mathematics —an exact science.

Graduates Are in Demand.

What has become of the thirty-nine graduates? These thirty-eight young men and one young woman—Miss Davis of Denver—were each favored with two or three offers, while the secretary of the Alumni Association, who conducts an employment bureau at the school, has at present on hand close to 100 unfilled requests at good salaries, ranging from $125 to $250 per month. In a word, every member of the class of 1920 was placed before school was adjourned for the summer. Let us see where the demand came from, as that best answers the question of standard:

Seven Go To Mexico.

Abadilla, Gallucci, Levings, Linn, Locke, Ornelas, and Urteaga went to Mexico, where mining and metallurgy is recovering from the effects of a prolonged revolution, with the generous backing of English and American money. Four of these young men will specialize in mining, while three will give their attention to geological work. Their salaries range from $150 per month to $200 and expenses, computed in American gold.

The Smuggler-Union Company at Telluride, of which General Bulkeley Wells is president, calls Antonio Delgado Alvir, while Yoong Yih Wong and Yu Den Woo are at the Liberty Bell mines and mill in the same district, gaining practical experience before they go home to take leading positions in China, which has been sending its mining and metallurgical students, supported by the government, exclusively to the School of Mines at Golden for the past sixteen years.

Anaconda Recognizes Golden Talent.

Now comes the prosperous and well directed Anaconda Copper Company with its consulting engineer, general superintendent and some ten experts, all from Golden school. This year the Anaconda Company, the largest single producer of silver in America, has added to its Golden list Messrs. Benbow, Brown, Buck, Flint and Klamann, while William Bennett Case joins the Midwest Refining Company at Billings, serving as geologist. And Montana has its own school of mines, at which the professor of mining, Lester J. Hartzell, is from Golden, taking with him a mighty record in football.

Samuel Berkowitz is at the International Lead Refining plant at Hammond, Ind., in the testing department. The Braden Copper Company, a large Eastern concern, has placed Charles Leslie Boeke and John S. N. Davis at Rancagua, Chile, while Ernest Bernard Bunte, last year's football captain, is now serving with the engineering department of the United States naval school at Annapolis, where the admirals come from.

Midwest Gets Only Woman Graduate.

Another large employer of experts, the Midwest Refining Company—which may be trusted to recognize standard where standard exists—has secured the services of Ninetta Alia Davis, the only woman in the class. Tse-Yue Chow is taking post-graduate work at the University of Chicago. Ethelbert Dowden is in the oil business in Texas. George Vincent Dunn, the prize student, is with the Roxanna Petroleum Company at Cheyenne. George G. Goodwin and George Morton Kintz are in California engaged in business with relatives, and Capt. Arthur C. Kinsley, who served in the world war, is at the Sunnyside mines near Silverton.

Phelps-Dodge Draws on Colorado.

At Raton, N. M., Edward J. Krier is engineer and chemist for the Rocky Mountain and Pacific Coal Company; Victor John Lynch is engineer for the Phelps-Dodge Copper Company at Tyrone, and Karl W. Reynolds is on the geological survey of the State of Kansas. At Metcalf, Ariz., Fitch Robertson is engineer for the Arizona Copper, while at Mullen, Idaho, Edward Wesley Robinson is the chemist and mill man of the Gold Hunter Mining and Smelting company.

In distant Bolivia, where American capital is now prominent, Charles M. Schneider ("Chuck," of the grid game) is engineer for the Bolivia Gold Exploration Company.

Juan Serrano is South American agent for the Rand-Ingersoll Drill Company at Easton, Pa., and F. L. Serviss is engineer of the Utah Fuel Company at Sunnyside, Utah. At Florence, this state, Myron Le Roy Sisson is with the River Smelting and Mining Company as chemist and foreman.

Walter B. Tongue is on the Kansas geological survey, as is also Ralph M. Weaver. Frederick A. Lichtenheld, a Golden-Denver product, is with a large chemical company in this city, having specialized in chemical work. He has several offers to choose from.

Denver Woman Invented Flotation.

This accounts for the 1920 or world war class. The names of the corporations who have called these men attest the standing and standard of the Colorado School of Mines. How this standard compares with that of 1903 is easily disposed of. In that now distant year the electric furnace was not a reality, concentration was making itself felt, the cyanide process was a topic of academic discussion, while flotation (the invention of Carry J. Everson of this city) was yet an experiment in its application to ores. Last year it treated some 30,000,000 tons. Bearing this in mind, it is easy to see that the requirements of 1903 were less than the requirements of the present day. The School of Mines was equal to the old requirements and it is also equal to those of the present, when the electric furnace, up-to-date concentration, cyanide, and the flotation process must be reckoned with as well as the various rare minerals.

Is such buncombe worthy of being reprinted on Colorado School of Mines stationery and distributed to advertise the name of our Alma Mater? This is a sample of what our "habitué—trustee", Jas. T. Smith, indulges in to acclaim to the world the merits of the School of Mines. Any one familiar with conditions at Golden is nauseated by such mockery. This class of propaganda is the delight of Dr. Victor C. Alderson; hence the reason for its being reprinted.

It is intended for the gullible public. Such an extravagant manner of stating facts borders on rank deception. Although it is true that the graduates secured the positions mentioned, such careless statements as "the secretary of the Alumni Association, who conducts an employment bureau, has at present on hand close to 100 unfilled requests, etc., "and" China, which has been sending its mining and metallurgical students, exclusively to the School of Mines for the past sixteen years", are untruthful exaggerations.

At no time has the Capability Exchange ever had more than a dozen to fifteen unfilled orders for men. Those who have visited any other mining school know that they, too, have their share of Chinese students. Likewise to say that each of the thirty-eight graduates were favored with two or three offers is misleading. Two or three of these students may have had more than one offer. In most cases the second opportunity was for a position that had been generally passed around the class.

Likewise, such twaddle as contained in the last paragraph is deceptive. It is sheer nonsense to create the impression that the graduates are skilled in the numerous new branches of the mining industry. These ramifications are but new applications of fundamental principles. It is a physical impossibility for the student to learn but a smattering in any of them. The study of these new arts is not the exacting part of the curriculum in the education of an engineer. These can be acquired in any trade school. Mastery in the fundamental subjects: mathematics, physics, chemistry and geology, is what constitutes the basis of a sound engineering education.

C. ERB WUENSCH.

TEN WAYS TO KILL AN ASSOCIATION

1. Don't come to the meetings.
2. But if you do come, come late.
3. If the weather doesn't suit you, don't think of coming.
4. If you don't attend a meeting, find fault with the work of the officers and other members.
5. Never accept an office, as it is easier to criticize than to do things.
6. Nevertheless, get sore if you are not appointed on a committee, but if you are, do not attend the committee meetings.
7. If asked by the chairman to give your opinion regarding some important matter, tell him you have nothing to say. After the meeting tell everyone how things ought to be done.
8. Do nothing more than is absolutely necessary, but when other members roll up their sleeves and willingly, unselfishly use their ability to help matters along, howl that the association is run by a clique.
9. Hold back your dues as long as possible, or don't pay at all.
10. Don't bother about getting new members. "Let George do it"!

—Michigan Architect and Engineer.

TECHNICAL REVIEW

GENERAL.

A World View of the Oil Supply. By George Otis Smith. (E. & M. J., November 27, 1920.)

Estimates show five times as much oil in the northern hemisphere as in the southern, because the south has less land and larger unexplored areas. Besides this, the United States alone is believed to possess oil shale that contains ten times as much oil as the petroleum of North America. The coal in the United States would produce our power for 57,000 years, while the oil would produce it for only nine and three-quarter years. An extension of this time limit will demand a regulation of the use of petroleum products by pleasure automobiles, locomotives and stationary engines. Much can be gained if all nations allow foreign capital and operations an equal share in the oil fields; nations should also advocate a policy of thrift in the use of petroleum products. Economy in the distribution of these products would be aided by concerted action. J. A. H.

The Administration of the McFadden Bill. By L. S. Willis. (E. & M. J., December 11, 1920.)

The fact that increased costs of labor and material must be met by a product of stationary value, threatens to shut down the gold mines of the country. The McFadden Bill provides for a premium for the producers equal to a tax on the gold consumed and imported. France has successfully enforced such a measure. Half of the gold produced is used in the arts. The logical system is to collect the tax at the mint, but it is claimed by some that this would work a hardship on the manufacturers. Old jewelry, returning to the trade as scrap, would have to be refined separately. These provisions have created much opposition from consumers of gold. J. A. H.

MINING.

Tin Mines of the Quimas Cruz Range in Bolivia. By Joseph T. Singewald, Jr. (E. & M. J., November 20, 1920.)

The Quimsa Cruz Range, on the eastern side of the Andes, contains rich tin deposits, but is little developed because of the rigors of the climate. The range consists of granite and metamorphosed shale, and contains many fractures which are the seat of tin and of tungsten veins. The Compania General de Minas en Bolivia, has a mine in the Chognacota Canyon at an elevation of 17,000 feet, producing 2½ tons of concentrates daily. To the north the Guggenheims hold the Caracoles veins which fill a system of paralelled joint planes in granite instead of sedimentanes. They also own the Pacum veins which once produced a 70 per cent concentrate of tungsten oxide containing 2 per cent tin. J. A. H.

Transportation in Sye Chuan, China. By J. A. T. Robertson. (E. & M. J., November 20, 1920.)

Improvement in transportation is the need of economic conditions in China, where costs prevent the development of promising mining industries. Copper smelters are built near the mines, but operate only on half time because carriers cannot bring sufficient ore. Sye-Chuan, without a mile of railroad is connected with the world by the Yang-tye River, up which freight is carried. Practically the only other means of transportation in the province is by coolie, at an average cost of $0.15 per ton mile. J. A. H.

The Diamond Drill as an Aid to Oil Prospecting. By Albert H. Fay. (E. & M. J., December 11, 1920)

,Coal, iron and copper have been estimated closely by the diamond drill that there is no reason to suppose that formations capable of bearing oil cannot be located in the same way. Some districts which lack outcrops have well developed horizon markers at depths of from 300 to 800 feet. With a diamond drill such beds could be prospected at a low cost and the formation definitely determined. The holes could be proven from 500 to 1,000 feet apart and still give a good contour. J. A. H.

METALLURGY.

Electric vs. Combustion Furnaces for Low Temperatures. By Frank W. Brooke and G. P. Mills. (C. & M. E., November 24, 1920.)

Although it is a recognized fact that excellent results in the heat treating field have been attained with the various types of combustion furnaces, electric furnaces are becoming more and more commonly used. There are many advantages about the electric furnace. Since the heating is direct there is no loss of heat in transmission. The temperature is easily and accurately controlled. Taking into consideration the oil shortage, when thinking of oil burning furnaces, the source of heat for the electric furnace may be called reliable and permanent. An economy of space, in auxiliaries, and in operation are points in favor of the electric furnace, while with the present improvements the cost of maintenance is far below that of the combustion furnace. Last, but not least, the quality of the product under the improved methods is equal to that of the combustion furnace, if not better than the usual output of the latter. R. W. P.

Tanks and Pipe Lines as Causes of Accidents. By Homer A. Hoffman. (C. & M. E., November 24, 1920.)

Are large number of accidents in chemical plants resulting from breaks in pipe lines and tanks good reason for considering the construction and care of same? The points to be considered are (1) materials; (2) construction of underground tanks and distribution; (3) location and construction of overhead tanks; (4) safe methods for cleaning and repairing tanks. R. W. P.

Pure Metallic Arsenic. By Chester H. Jones. (C. & M. E., November 17, 1920.)

The Hoskins Process Development Company of Chicago has set a high standard for the production of metallic arsenic. The metal has a high variety of uses. It is a flux for other metals; it increases the tensile strength of staybolts, sheets, tubes, etc., when these are used in locomotive fireboxes. It is used in many eutectic mixtures. The finding of many new uses for this metal has certainly been a thing worth while and the field is still scarcely touched. R. W. P.

Electrolytic Zinc Methods. By Herbert R. Hanley. (M. & S. Press, December 4, 1920.)

The production of electrolytic zinc has been considerably increased the last five years. The deposition of zinc must take place from the solution containing the metal as a sulphate, and in the absence of certain other substances, or limited amount of them. The various steps are as follows: Roasting of zinc sulphide ores; smelter fume; roasting of acid treated fume; leaching both of calcined ores and of raw arsenical zinc fume; filtration removal of various impurities; final zinc electrolysis. R. W. P.

PERSONALS

'97.

Marshall D. Draper is Chief Engineer for the Yunnan Kotchin Tin Trading Co., Kotchin, Yunnan, China.

'99.

A. R. Hodgson of Granby, British Columbia, is now a resident of Denver. Address, 186 South Corona Street.

'01.

George O. Marrs is now residing at 262 Alvarado Road, Berkeley, Calif.

'04.

Wm. D. Kilbourn, who is with the U. S. Metals Refining Co., East Chicago, Ind., has changed his home address to 6722 Chappel Avenue, Chicago, Ill.

Axel E. Anderson, technical representative of the E. I. Du Pont de Nemours Company, recently visited the Colorado oil shale fields.

'06.

George H. Heitz is in the office of the City Engineer, Los Angeles, Calif. His address is 919 E. 49th Street.

Walter D. Abel has returned to Mackay, Idaho, from San Francisco. He is with the Doughboy M. & L. Co.

'08.

Hamilton Kilgour's address is care Promenade Club, Chaltenham, England.

Herbert A. Everest, mining engineer and geologist, Oklahoma City, Okla., has moved to 1236 McCadden Place, Los Angeles, Calif.

'09.

Dudley M. Wilson has completed his work as constructing superintendent of oil field installations for the Texas Construction Company of Dallas. He is temporarily at Eastland, Texas; P. O. Box 726.

'10.

H. J. Hilton was a visitor in Golden recently. He expects to enter the oil shale business.

'11.

Walter W. Barnett has just returned from Korea, where he has been for the past four and one-half years. He was engineer for the Seoul Mining Co. Mr. Barnett, wife and daughter are enjoying a well-earned vacation in Denver. Address 636 Josephine Street.

'13.

Edmund Stein is with the U. S. Bureau of Mines at Bruceton, Pa.

'14.

Joe Woolf and Arthur Krohn are scouting for the Carson Oil Company of Chi-

cago, Ill. At present they are located at Bowling Green, Ky. Other Mines men in Bowling Green are J. W. Whitehurst, '10, and H. G. Schneider, '18.

E. R. Crutcher is superintendent of the ferro-alloy department of the Anaconda Copper Mining Co. at Great Falls, Mont.

'15.

Chas. F. Haselton, who has been leasing in the Cripple Creek District, has gone on a visit to his home in Connecticut. Address 550 Prospect Avenue, Hartford.

Van Cleave A. Olson is leasing in the Park Utah Mine, Park City, Utah.

'20.

George V. Dunn and Guy E. Miller, geologists with the Matador Petroleum Co. of Cheyenne, Wyo., were holiday visitors in Golden.

'21.

J. P. Bonardi, of the U. S. Bureau of Mines, Golden, Colo., has completed the prescribed course at the School for the degree of E. Met. He will not receive his diploma until next May. Bonardi will continue his work on the staff of the Bureau of Mines at Reno, Nev., the new home of the Golden station.

José Moraes will return to his home, Rua de Barao do Triumpho, 295 Recipe, Pernambuco, Brazil, after visiting some of the important mining and smelting districts in Colorado, New Mexico, Arizona, Utah, South Dakota, Michigan and Pennsylvania.

A. H. Kiesel has gone to his home in Ouray, Colo., for a short visit.

Wm. J. McKenna has gone to Tooele, Utah.

EX-MINES NOTES.

'10.

Maurice R. Hoyt and Mrs. Kathleen La Salle Murphy were married at Anaconda, Mont., on December 1. Mr. Hoyt is Assistant Superintendent of the Acid Plant of the Anaconda Copper Co.

Dr. Regis Chauvenet

OBITUARY.

Dr. Regis Chauvenet, our highly esteemed President Emeritus, died at his apartment in the Argonaut Hotel, in Denver, on Sunday afternoon, December 5. He was in his seventy-eighth year. His funeral services were held at the home of Mr. and Mrs. Frank Bulkeley, 1065 Pennsylvania Street, Denver, on December 7, 1920. Interment was in Fairmount Cemetery. The funeral services were conducted under auspices of the Alumni Association. The funeral sermon was preached by Rev. Gustave Lehman, of the Episcopal Church, of Golden. The active pallbearers were John G. May, Lewis B. Skinner, William D. Waltman, Edwin H. Platt, Frederick C. Steinhauer and Orvil R. Whitaker. The honorary pallbearers were Dr. Paul Meyer, Frank Bulkeley, Capt. James T. Smith, Harry M. Rubey, Senator C. S. Thomas, Dr. H. B. Patton, Thomas L. Wilkenson, Ex-Gov. Alva Adams, Dr. Charles Norlin, Dr. John P. Kelly, Louis S. Noble, David W. Brunton, Dr. J. H. Baker and Judge John Campbell.

The last time that Dr. Chauvenet appeared in public was at the Annual Alumni Banquet on May 8 of this year. He was our guest of honor. Although it was evident that he was gradually failing in health, he was as keen and witty as ever. His presence made the banquet a success. He jokingly remarked that he felt that this was the last Mines banquet that he would have the pleasure of attending. Little did any of those present that evening realize the sad truth that he had spoken. It is with profound sadness that we mourn his loss. His unusual personal charm and sterling character made him endeared to all of us. All those who attended school during his regimé look back with pride to the days when they were known as "Chauvey's Boys".

Dr. Chauvenet was born in Philadelphia, October 7, 1842. He was the son of William and Catherine (Hemple) Chauvenet. He graduated from Washington University in 1862 with the degree of Bachelor of Arts, and in 1864 he received the degree of Master of Arts. In 1867 he received the degree of Bachelor of Science at Harvard. In 1900 his alma mater conferred upon him the degree of Doctor of Laws.

From 1871 to 1883 Dr. Chauvenet had an office in St. Louis as an analytical chemist, and was not only successful in a financial way, but won a wide reputation technically. During this time he was chemist to the Missouri Geological Survey. From 1872 to 1875 he was also city gas inspector for St. Louis.

In 1883 he was called to the School of Mines as President and Professor of Chemistry and Metallurgy. It was largely through his high educational ideals and efforts that the School of Mines won its place among the institutions of higher learning of the world. In 1902, after a

DR. REGIS CHAUVENET, 1842-1920.

faithful service of twenty years, he resigned and again entered private practice as a consulting engineer and chemist, with offices in Denver. Dr. J. L. Palmer was appointed to the presidency, who in turn was succeeded by Dr. Alderson in 1903.

After Dr. Chauvenet resigned as active head of the institution, he was made President Emeritus, and for many years was a special lecturer in the chemistry and metallurgy departments. During the latter years of his life he had devoted most of his time to writing a history of the Colorado School of Mines. This manuscript, fortunately, was completed a very short time ago.

Dr. Chauvenet had been in great demand as a lecturer. His talks on stoichiometry, theoretical chemistry, metallurgy of iron and steel, and lead and zinc, were famous. In 1911 he wrote a volume on "Chemical and Metallurgical Calculations" which enjoyed a wide circulation.

In 1887 he married Miss Virginia Mellen, a Golden school teacher. She survives him. They had no children. In ad-

dition to his widow he is survived by a sister, Mrs. M. C. Hilden, of New York, and two brothers, Dr. Samuel Chauvenet, of Philadelphia, and Wm. Chauvenet, of St. Louis.

The Board of Trustees adopted the following, resolutions in honor of Dr. Chauvenet:

Whereas, Dr. Regis Chauvenet, President Emeritus of the Colorado School of Mines, departed into eternal life from his residence in Denver, Colo., December 5, 1920; and,

Whereas, Dr. Chauvenet, from 1883 until the fall of 1902, served with success and distinction as President of the faculty and executive officer of the Colorado School of Mines, and as such President and executive founded and developed the curriculum which earned for the institution a world-wide reputation for scope and scholastic soundness in the field of applied science; and,

Whereas, Dr. Chauvenet ended the years of his lengthy and scholarly career as President Emeritus and special lecturer at the school, having in hand also the preparation of a history of the school; therefore, be it

Resolved, By the Board of Trustees, the faculty and the student body of the Colorado School of Mines, that there be placed upon the records of the institution our sincere appreciation of Dr. Chauvenet's attainments, his eminent services to the Colorado School of Mines, and his upright character as a citizen and a man.

Resolved, further, That a copy of this record be forwarded to Mrs. Chauvenet, together with an expression of sincere condolence, in this period of her affliction, on the part of the Board of Trustees, the family and the student body of the Colorado School of Mines.

C. E. W.

Many of our graduates will be shocked to learn of the death of one of the School's well-known employees, a man who upset many of their nocturnal pranks, John Jeuck.

John Jeuck died suddenly on Friday, December 10 from a stroke of apoplexy. Mr. Jeuck had been night watchman at the School of Mines for the past twelve years. During this time he had not missed a single night from duty until a few months ago, when heart trouble necessitated his taking a rest. A few days before his death he resumed his duties. He felt better than he had in years. It was, therefore, a terrible shock to his family and many friends, when they learned the sad news that he had suddenly dropped dead in his back yard.

Mr. Jeuck has been a resident at Golden since 1878. He was sixty-four years old. He was a prominent member of the Woodmen of the World. Mr. Jeuck is survived by his widow, two sons and two daughters.

SCHOOL NEWS.

The Trustees of the Colorado School of Mines are making plans to acquire a lease on the Miami Tunnel and adjoining mining properties at Idaho Springs. The purpose of this is to establish a summer camp where the students can obtain some "practical experience in a real mine."

The Annual Freshman Ball was held at Guggenheim Hall on Friday, December 3. This year the dance was a formal affair, the first time in several years. All the fraternities gave their usual elaborate house parties.

School closed on December 18 for the Christmas holidays. Classes will be resumed on January 3.

A reprint from the Rocky Mountain News, December 18, which we thought might prove of interest to our readers:

Head of Mines Will Tour West's Shale Plants.

Taking advantage of the Christmas holidays at the Colorado School of Mines, President Victor C. Alderson yesterday started on a visit of inspection to the oil shale plants now in operation at different points in Utah, Nevada and California, **WITH A VIEW TO KEEPING THE PRACTICE AT THE EXPERIMENTAL PLANT AT GOLDEN FULLY UP TO DATE.**

On Tuesday evening, Dec. 22, the Presidents of all the State Institutions (except Mines) met with Lieutenant-Governor George Stephan at the Metropole Hotel to discuss plans for the consolidation of their managements. Those present were as follows:

Lieutenant-Governor Stephan, chairman; President George Norlin, University of Colorado; President Charles A. Lory, Colorado Agricultural College; President J. C. Crabbe, Colorado's Teachers College; President Quigley, State Normal College; Prof. I. A. Palmer, Colorado School of Mines.

Prof. Palmer represented President Victor C. Alderson, who is absent on an oil shale inspection trip. The meeting should have been held in the afternoon, but it was postponed so that President Norlin of the University of Colorado could attend. The Board of Regents held their meeting in the afternoon at Boulder.

Numerous proposals were discussed. The most interesting was the possibility of placing all the State institutions under one board of regents—this will have to be voted on by the people; the formation of a Central Advisory Board on Courses of Instruction, and the formation of a Central Purchasing Agency.

Note how anxious President Norlin was to attend. Then refer to the sentence in the **heavy letters** in the previous item relative to Dr. Alderson's oil shale trip. This sounds interesting, but what practice is referred to? "'Nuf said"!

THE FOLLOWING MEN WILL GRADUATE IN JANUARY, 1921.

Brown, Frank A.
Buckely, H. G.
Charles, Iestyn M.
Cunningham, Samuel D.
Dutton, Dewey A.
Gunther, Walter A.
Horcasitas, Javier A.
Jen, T. Y.
Kiesel, A. H.
Lee, Y. C.
Mayhugh, Dorsey E.
McKenna, William J.
Moraes, Juan E. A.
Schade, Roger M.
Zambrano, José.
Bonardi, John P.
Salzer, George W.

Many of these men have already completed their work and have left for a visit to their homes.

ATHLETICS

1921 Basketball Schedule.

January 29—Mines vs. Denver University at Golden.

February 4—Mines vs. Colorado University at Golden.

February 5—Mines vs. Colorado Aggies at Fort Collins.

February 12—Mines vs. Colorado College at Colorado Springs.

February 18—Mines vs. Colorado Aggies at Golden.

February 19—Mines vs. Colorado College at Golden.

February 22—Mines vs. Colorado University at Boulder.

February 25—Mines vs. Denver University at Denver.

The 1921 basketball season promises to be a successful one for Mines. The inter-mural basketball tournaments have started. By virtue of these, practically every fraternity and club has a team, which results in making basketball popular. This brings out all the athletic material in school, which enables Coach Glaze to have a good-sized squad from which to select the varsity.

The following inter-mural teams are represented:

Latin-American.
Met. Club.
Betas.
S. A. E.'s.
Kappa Sigs.
Sigma Nu.
Barbs.
Freshmen.

The first game was played last week between the Met. Club and the Latin-Americans. The latter won by the score of 16 to 14.

Basketball practice is being held during the Christmas recess. In practice games so far the varsity has defeated the crack Wheatridge High School team by the score of 37-27, and the Cottrells, an amateur club who held the Denver championship last year, by the score of 27-17.

Associated Student Council.

Plans are practically completed to organize what shall be known as the "Associated Student Council." This will be composed of a small group of selected students, who shall govern the student activities in athletics, social life, matters of scholastic ethics and conduct. Each fraternity, club and the Barbs, shall be entitled to a definite number of representatives in proportion to their respective numbers. It has not been decided as yet as to how many representatives shall be chosen. This and other details are now being studied. It is expected that the organization will be in active control of student affairs by the time the second semester commences.

Golf is Added to Intercollegiate Sports.

Golf will be added to the sport calendar of Colorado colleges this year. This was agreed upon at a meeting of the five coaches which was recently held in Denver. The teams will be ready for competition in May.

The adoption of this sport for intercollegiate competition is the result of a movement started more than two years ago. Coach Joe Mills, of the University of Colorado, was instrumental in the campaign. He is one of the best golfers in the state and an ardent devotee to the sport.

Mines, Colorado College, Denver Uni-

versity, Colorado University and Aggies will all compete. Except for the School of Mines each of these colleges has a golf course available for practice at the city in which it is located. The Golden men will be able to use the links at the Lakewood Country Club, which lies about midway between Golden and Denver.

While several dual matches may be arranged for the month of May, the championship will be decided at a tournament in which teams from all schools compete. It is probable that it will be held on one of the Denver courses.

1920 FOOTBALL LETTERS AWARDED.

Eighteen members of the 1920 football squad won their letters. They are as follows:

McGlone, Linderholm (Capt.); A. Bunte, Mitchell, Fisk, Clough, Parkinson, Hyland, Gibbons, Black, R. W. Crawford, Squires, Jordan, Robertson, Poulin, Davis, Clark, Houssels.

Of these, A. Bunte, '22, was elected captain for the coming season.

McGlone, '23, was the only Mines player to win a position on the all-conference, all-Colorado teams. He was awarded the position of tackle on both of these.

OUR UNFORTUNATE 1920 FOOTBALL TEAM.*

It is too late to cry over the unfortunate 1920 football season in which we lost every game. It is but human to offer explanations. We hear all sorts of comments, some honest, but, as might be expected, much is biased and directed against Coach Glaze. The world judges too much by results. If you are victorious they are equally as reckless in bestowing credit. In a game the man who carries the ball receives the applause of the crowd. It is only the skilled observer who sees that teamwork alone made the hero's gain possible. Conversely, if he fails to make a gain, he is "rotten", even though his inability to advance the ball may have been due to poor teamwork.

So it was with the Mines team this year. Not only was there lack of team work on the part of the team, but on the part of the school as a whole. It is quite unfair to direct all the criticism at Coach Glaze.

We started the season with bright prospects. We had nine letter men, practically eleven star men from last year's freshman team, and in addition an abundance of good material of undemonstrated ability. Things went with a zest until "Mr. Jinx" put in his appearance. In almost every practice some one was injured. This necessitated frequent changes in the line-up. Many of the first team men were out practically all season. As those with minor injuries were again able to play, the substitutes were relegated to the side-lines. This unquestionably caused some hurt feeling. Some of this resulted in dissension between the various fraternities, as well as with the Barbs. To help breed discord at least one member of the faculty lead an agitation to create a sentiment against the coach. He accused the coach of being unable to impart his knowledge to others, as well as being unable to inspire team work. This was bad taste and decidedly out of place. Coach Glaze is an all-American player, and not only knows the game, but also came to Golden with an enviable record as a coach. No coach can inspire team-work with a broken morale, and an organized opposition against him. Coach Glaze is a gentleman. He tries to be decent to all his men and treat them as such, instead of as being a lot of incorrigibles. Had he applied the "mailed fist" he might have enforced discipline. Even in spite of these handicaps; a crippled team, discord and opposition, he staged a wonderful come-back in the last two games of the season.

Another feature that helped break the morale was the fact that the hardest games were played first in the season, with a crippled team.

Coach Glaze was assisted by Cuddy Murphy and George Williamson. Assistant Coach Murphy was an all-American tackle from Dartmouth, and has played two seasons with Jim Thorpe's professionals. George Williamson is a post-graduate at Mines. He played four years on Cornell. Murphy coached the line exclusively, whereas Williamson looked after the second-string men. This left Glaze free to develop the varsity field and to supervise in general. With all this coaching, it seems as though there is something lacking, besides teaching ability and inspiration.

The true spirit of athletics is not solely to win, but to develop sportsmanship, fighting spirit, and team work. If football cannot unite a student body in these respects, there is something else lacking besides coaching ability. Be men and face all the facts, and you will see that "hard luck" was the real culprit in the case. To change coaches every time you fail to win a championship is bad business as well as poor sportsmanship.

Consider the case of Coach Hughes at Aggies. He did not develop championship teams his first few years. He worked hard, and with the patient support of the whole institution, he has finally succeeded in placing the Colorado Agricultural College among the leaders in the Rocky Mountain Conference Athletics, whereas they formerly were "tail enders."

In conclusion, consider the other branches of athletics. When has the School of Mines had a coach who is as qualified in all branches of sport as is Coach Ralph Glaze? Never! If Prof. Joseph O'Byrne wants to criticize, let him do so where he is qualified.

Let us hope that any others who may have fallen in line with the current of unsportsmanship, will reconsider their opinions. In your desire to prove an excuse, don't try to make a "goat" out of your coach.

C. E. W.

* The conclusions have been reached after carefully interviewing individuals of various opinions and sentiments.

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