

Electro Amalgamation, by Elmer E. Carey. Mexican Mining Journal, Vol. XI, No. 5, p. 26.

Gives the description of an electro-amalgamating sluice for which claims are made as follows:

- (a) Cleans and brightens rusty gold.
- (b) Counteracts the effect of grease or oil.
- (c) Preserves the mercury in a highly excited and active state.
- (d) Forces each particle of gold in intimate contact with the mercury.
- (e) Amalgamates all free values, including platinum and iridium.

A Successful Treatment of Concentrates by Cyanidation, by R. E. Tremoureux. Mexican Mining Journal, Vol. XI, No. 5, p. 23.

The author states that a satisfactory extraction can be secured by first re-grinding

the concentrates and then mixing them with the tailings. This scheme is cheaper than sliming all the tails from the battery direct, without previous concentration.

An Australian Electrolytic Copper Refinery, by R. G. Casey, Jr.

Engineering and Mining Journal, Dec. 3, 1910, p. 1111.

Gives a complete description of the plant located at Port Kembla, New South Wales.

Notes on Battery Practice on the Rand, by A. R. Stagpoole.

Mining World, Oct. 29, 1910, p. 811.

The author gives some very useful suggestions along practical lines. The following subjects are taken up: Collection of sand from amalgam plates; changing screens; arrangement of "wash-up" and amalgam rooms.



The COLORADO SCHOOL OF MINES MAGAZINE

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GOLDEN, COLO., FEBRUARY, 1911.

No. 5.

The Colorado School of Mines Power Plant.

(Professor William J. Hazard, '97.)

When our present powerhouse was completed, the old engine, jackshaft, pulleys, clutches, and generators were moved from the basement of "Engineering Hall" where they had been installed in 1894 and were given a place in one end of the new building. This equipment was set up in the same relative position that it had occupied in its original location and comprised a fifty-horsepower Russell high-speed engine, a thirty-kilowatt, one hundred and twenty-five cycle, single-phase General Electric lighting alternator, a fifteen-kilowatt direct current machine, and a one and one-half kilowatt Edison bipolar generator.

The jackshaft also carried a pulley for driving a two-kilowatt Brush generator, a four-foot Prony brake wheel, and an idle pulley for experimental work from which a blower had been run.

The Sturtevant fan engine was taken from the old boiler house and set up beyond the other machines. A six-kilowatt Westinghouse generator was purchased for small lighting and power loads and was belted from the fan engine.

Next in line came the DeLaval Turbine and twin generators, which furnish seventy-five kilowatts, at either one hundred and twenty-five volts or two hundred and fifty. This machine can handle the entire lighting and power load of the school as installed at present, the connected lighting load being about seventy-five kilowatts and the connected power load, half that amount. A five-panel black enameled switchboard, built by the Western Electric Company, controls the output of the turbines.

Steam for the above engines as well as for heating, is supplied by a one-hundred horsepower Babcock & Wilcox boiler and a two-hundred horsepower boiler of the same make. The old eighty-horsepower return tubular boiler was fitted with new tubes throughout, about the time it was moved

to its present location, and is now used for experimental work and to furnish power when the demand is within its capacity.

After the engines and generators had been put in place, together with an exhaust steam feed water heater and two boiler feed pumps the engine room was less than half full. Many persons thought we would never be able to fill up the engine room, and for a year or two it was used as a museum and mining laboratory. The two-stage Leyner compressor was added to the equipment, a half dozen air drills and a mine car were set up, and a collection of pumps was put on exhibition.

Soon after this, a ten-horsepower Fairbanks-Morse gas engine was installed for laboratory work and to run a small generator in the summer months when the steam plant was shut down. Then an air brake compressor was put in to maintain the air pressure when only a small amount was being used. These additions gave us ample power all the year around for normal operation.

When the Testing Plant was projected the designers planned a motor installation of two hundred and seventy horsepower. It was thought that a possible maximum of one hundred and fifty horsepower might be used at one time and the power house equipment was selected on that basis. As the generator capacity in kilowatts should be approximately equal to the motor output in horsepower, it was necessary to provide for one hundred and fifty kilowatts.

The mill is too far from the power house to transmit the required power economically at low voltage, either direct or alternating, and as the use of three-phase induction motors in mill work is standard practice, we adopted a twenty-three hundred volt, three-phase, sixty-cycle transmission, and will step down at the plant to the motor voltage of two hundred and twenty

or four hundred and forty. In order to make as flexible a power plant as possible, to obtain a variety of power units for instruction and experiment and to utilize our existing plant to the fullest extent, it was decided to install a gas producer, gas engine and generator to supply seventy-five kilowatts at eighty per cent. power factor and to put in a rotary converter or a motor generator as a connecting link between our seventy-five kilowatt direct current turbine and the new alternator. This has been done and the following equipment is now in place, the general contract having been let to the Westinghouse Machine Company. This company has furnished a double zone bituminous gas producer, similar to those in use at the plant of the Western Chemical Company, in Denver, and a three-cylinder vertical gas engine, completely equipped with indicator rigging for power output and thermometer wells for temperature of gases at admission and exhaust and temperature of jacket water. There is a Junkers' Calorimeter for determining the heat value of the gas used, and a filter for determining the solid content of the gas.

The gas engine is direct connected to a one-hundred kilo volt-ampere, twenty-three hundred volt, sixty-cycle, revolving field alternator, running at two hundred and fifty-seven revolutions per minute. This and the other electrical equipment is furnished by the Westinghouse Electric & Manufacturing Company.

The motor generator set is made up of a one hundred and twelve horsepower synchronous motor with a three-phase starting motor and a seventy-five kilowatt two hundred and fifty volt direct current generator with balance coils for giving a neutral point so the machine can feed the three-wire lighting and power mains.

The switchboard is made of black enameled slate in seven panels and is equipped with alternating and direct current ammeters and voltmeters, power factor indicators, synchroscope, ground detector, voltage regulator, and auxiliaries.

The lighting circuits supplied from this board are furnished with circuit breakers for both alternating and direct current and with switch interlocks to prevent the accidental closing of any switch. Oil circuit breakers have been put in both alternating current generator circuits and the lines which go to the lighting transformers, the C. S. M. tunnel, and the testing plant. Westinghouse instruments are used throughout, excepting the Tirrill voltage regulator, made by the General Electric Company.

The motor generator set can be started by means of the three-phase starting motor or by supplying direct current to the generator, running it as a motor.

Whenever the combined alternating and

direct current load is less than seventy-five kilowatts, it can be supplied by the DeLaval steam turbine, using the motor-generator to furnish the alternating current, or it can be supplied by the gas engine, using the motor-generator to furnish the direct current. When the load exceeds seventy-five kilowatts, the gas engine and steam turbine can both be used to supply the power, having the motor-generator as an electrical coupling between the two.

This new apparatus has done much to fill up the power house. Everything is comfortably spaced, but we are not looking for "filling"—in fact, condensation has commenced. Changes in the laboratory work and power requirements have made the long shaft on the Russell engine unnecessary and so the generators were rearranged and the shaft cut off, making room for a Westinghouse Junior vertical steam engine, which is now driving the six-kilowatt generator and a new eight-kilowatt Crocker-Wheeler machine.

Thus the power house is entirely utilized at the present time.

THE FAR EASTERN PROBLEM.

(Yefah Chen, '14.)

The political dilemma between the West and the East will be probably the last vital problem concerning the human race. Tracing back our history, we can review some of the most critical stages of the human drama. The first notable one was that between the Persians and the Greeks: how the ancient Shah repeatedly threw immense troops into the democratic peninsula; how the brave Spartans won the last day, and how their inimitable record has excited wonder and admiration even to the present generation. The second was that between the Romans and the Carthaginians; how the three wars, waging on land and on water, between the passes of the Alps and among the tribes of the Iberians, at last brought the African commonwealth into humiliation, and how "Carthage should be destroyed" has been practiced by many a statesman of late ages. The third was the union of the thirteen colonies and the independence of this great republic: how the brave warriors and the brilliant thinkers laid down for once and for all the foundation of this inseparable and irresistible union. The fourth contact began half a century ago and is going on, that between the East and the West. By reason of the population of the two races, the intricacy of the different governments concerned in and its far reaching consequences, this will be the greatest and the last disturbance among the family of nations and will foreshadow all others of the past history.

Through her successive adverse fortunes in forced wars, China on the eve of 1894,

exposed her helplessness to the world, and her supposed strength and power once more passed into mystery. Thenceforth innumerable concessions, indemnity, requests and demands came in black and white, but if unfulfilled, on the end of the sword. So much have the Easterners suffered; so much have the Westerners profited. The writer has often wondered how the winner could conscientiously exact such unjust treatment from his temporary down-trodden foe, while in the eyes of the Creator, both are his created and are therefore, by natural ties, brothers. In this connection we may recall the far-sightedness of the American statesman, John Hay. When the nations were discussing the tearing up of old Cathay into piecemeals, seemingly that nothing but iron and blood could determine the supremacy of disputes, he, representing the Stars and the Stripes, intervened and at last prevented such a rash step. Were such a resolution passed in the council of nations, the conquerer will suffer bodily while the conqueror morally, tarnishing his conscience and rendering his moral sense dull and indifferent.

So much for the dark age of the present era. Japan, being a younger and therefore more active of the Asiatics, realized her paralyzed situation. Through her visitors, returned students and travelers, she noticed the superiority of the Western civilization. During the following thirty years she reformed old systems, learned new ways, abolished ruinous customs and installed profitable undertakings. Severe was the opposition, difficult was the trial, but she labored patiently, silently and consistently. In the meanwhile, Russia, being unable to obtain an ice-free port on the Baltic and on the Black, was concentrating her attention on eastern Asia. Korea thus became the buffer state between these two powers. Should the hermit kingdom fall into the hands of the czar, Japan would be sooner or later overrun by the Cossacks. Here, self-protection was necessary for self-preservation. The consciousness of appalling danger stimulated preparation against war which took place finally with unexpected end.

So much is for the awakening of the East. Japan has climbed up. The next question is: Is she going to be the leader of Asia? Her dealings in these three years have clearly demonstrated her unfitness. Her primary motive has been one of self-gratification. Being exhausted in the late war, she is trying all her means to restore her spent wealth, without due regard for the rights of other nations. Her secret unequal taxation of merchandise in Manchuria, her arbitrary building of unlicensed railways and her disguised merchants, spying forbidden and tactical places everywhere, have much lowered her esteem in the eyes of nations. Moreover, her population and her dominion is too insignificant for leadership. Can one

man hold the voice of twenty? She has advanced, indeed, but her advance is that of time, not of kind. Give China the sufficient time and she will outdo her wee sister in the long run. With the long and yet inaccessible coast line, China could attack and defend, trade and communicate. With her inestimable natural wealth, she could develop and supply. Her size and her population alone is sufficient to watch over other nations in war or in peace. Nothing but time will prove the validity of the above supposition.

Granted that time and opportunity are both in her favor, some might still question her tendency, whether she would stand for might or for right. Since a nation is an aggregate of people, the latter's characteristics can largely determine those of the former. What are the remarks of a Westerner on us? Are they not that we are peace-loving and self-satisfied? In fact it was self-satisfaction that kept us back in civilization, and peace-loving that make us to tolerate humiliation. Possibly nothing human is so unchangeable as the national character. The luxury of the Frenchman today is as famous as during the reign of Louis XVI. The seafaring of the Englishman is as prominent as that by Sir Walter Raleigh. Possessing these qualities, China shall protect her own rights, but not intrude upon those of others. Unlike Japan, a casual success will stimulate her to look for rainy days, and resume her responsibility in the Eastern affairs.

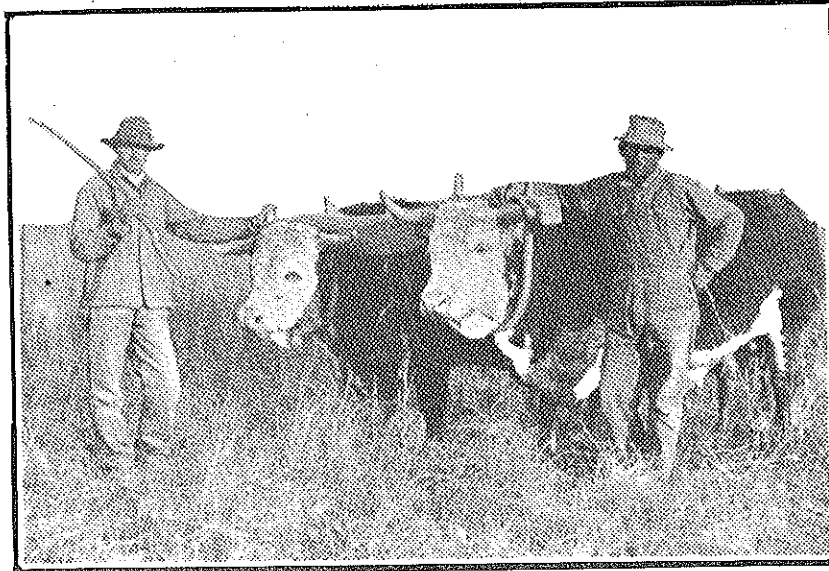
Such is the destiny of China as assigned to her by the Creator. Shall America join hands with China for the uplifting of mankind? Has America not the same motives? Are you not peace-loving and satisfied with your puritan land? At present foreign aggressions are still going on. From the aggressions come disputes, from the disputes comes war, from war comes woe to mankind. The natural cycle of events will not cease until each nation keeps within her own bounds. Wisely you have declared: "America for the Americans!" Shall you not be wiser to help us to declare: "China for the Chinese!"?

Lastly, what is the highest sense of conquering a people? In ancient times, it was the enslaving of the conquered; in mediaeval, the control over the conquered; in modern, the trade with the conquered, but at present the conversion of the conquered. Nothing but firm friendship can be derived from the similarity of belief. Shall you not convert us? Shall you not bring the lost sheep to your Master? We are ready to surrender before our Father. The day will come when light and truth shall diffuse into the most obscure corner of the globe. Then we shall see two nations, one young and one old, one on the right shore and one on the left of the mighty Pacific, shall preserve order and peace, shall hold the equilibrium of nations and shall see the cease of the talk of the Far Eastern problem.

BULLS BETTER THAN MODERN MACHINERY

Team of Forty Sturdy Animals Being Used Near Denver to Dig Ditches.

Forty-six bulls, hitched in pairs to a plow weighing three tons, with capacity to dig a trench five feet wide and four feet deep, is a sight which the average American would not expect to see on this side of the



TWO LEADERS OF TEAM OF FORTY BULLS USED TO DIG DITCHES TO DRAIN BIG PLOT ON BRIGHTON ROAD.

Pacific Ocean. A half hour's drive out of Denver will bring him to the scene, however, and a half hour's talk with the drivers will convince him that this is a most modern equipment for the work in hand.

Near the state fish hatchery on the Brighton road, where celery growing has become more profitable than mining, there is a tract of marshy land which, when drained, will be the most fertile in the neighborhood.

To dig the drainage ditches with hand shovels would be a tremendous task and contractors say the heavy modern ma-

chinery used in digging trenches would sink in the soft earth. So W. S. Morse and Sons of Denver have solved the problem with their bull team.

The bulls pay no attention to marshes. They pull steadily even when up to their hips in wallow.

"We have been at this thirty-three years," said R. E. Morse, son of W. S. Morse. "Father has worked bull teams in every part of the country. We have another job in Colorado and then we go to Texas.

"Most of our bulls are pedigreed and one of them weighs 2,260 pounds. It costs us \$40 a day to feed the team and we get one cent an inch for digging the trench. The cable attached to the plow weighs a ton. Horses would not do at this work. They will not pull through a heavy mire."

The drivers have a peculiar language for the team. They call each by name and crack immense whips over their heads, but they do not strike the animals. A run of fifty feet is made at each drag and the equipment is adjusted.—Denver Times.

The New Catalogue.

(Victor C. Alderson.)

The new catalog of the School is about ready for distribution and will soon be in the hands of the Alumni. It contains many new and interesting points. The picture of the campus will give the older Alumni a fresh realization of the growth of

the school. It shows Guggenheim Hall, the gymnasium, the assay laboratory, the power house and Stratton Hall. In the distance may be seen the school mine and the "M" on Mount Zion. It is probably the best view ever taken of the school grounds. Two

other important features are the new experimental ore dressing and metallurgical plant, and the increased laboratory facilities.

The most important subject, however, is the revision of the course of study. During recent years it has become clear to the authorities that if the school is to fulfill its proper function there must be a decided advance on two lines. The first—the work of bringing the school close to the practical problems of mining is solved by the erection of the experimental plant. The other, the work of developing better equipped mining engineers, is attempted by the revised course of study.

The work of the Freshman and Sophomore years is prescribed for all students. In these years mathematics is particularly heavy, chemistry runs through both years, descriptive geometry and machine design are continuous, physics has been strengthened, and geology has been introduced into the Freshman year. Plane Surveying comes in the summer after the close of the school year. By this arrangement every man gets the absolute fundamentals of an engineering education.

For the Junior and Senior years four groups are recognized: metal mining, coal mining, metallurgy, and mining geology. Only one degree will be given—Engineer of Mines—but a student will select the group in which he wishes to take his degree. The work of these groups is arranged on a systematic plan. First, in each group is placed Mechanics of Engineering, five hours a week. If the "weak sisters" have not already "resigned" this will probably bring about the desired result. Second, the fundamental courses in mining, metallurgy and ore dressing are placed in each group. Third, courses characteristic of each group are inserted. There remains about one-fifth of the student's time which he may fill with courses from other groups or from elective subjects. All students must take the regular mining and metallurgical trips, and the Senior trip.

Ten or twelve years ago the mining industry of Colorado was practically limited to gold and silver; now the field has widened. The number of metals mined has increased; new problems of concentration, milling, and metallurgy have arisen; coal mining has increased until the demand for coal mining engineers is far beyond the supply; mining geology is rapidly developing into an important branch of mining. Formerly a single course of study satisfied the needs of the students; now their needs are so varied that the facilities of the school must be extended if the school is to advance with the requirements of the age.

The revised course, far from lowering the standard of the school, has made the course decidedly stronger. One needs only to observe the emphasis laid upon the mathematics, the physics, the mechanics, the

chemistry, and the drawing to be convinced of this. Because of these two movements—the experimental plant and the revised course of study—it is felt that no other school anywhere offers the opportunities for a mining engineering education that are now to be found at Golden.

REPORT OF THE COMMITTEE OF INSTRUCTION OF THE COLORADO SCHOOL OF MINES ALUMNI ASSOCIATION.

Denver, Colo., January 17, 1911.

The President Colorado School of Mines Alumni Association,

Denver, Colorado.

Dear Sir: The undersigned, members of the Committee on Instruction of the Colorado School of Mines Alumni Association, have the honor of presenting the following report:

This committee was advised through you and the president and members of the faculty of the Colorado School of Mines that a change in the curriculum of this institution was under consideration, said change aiming primarily at a differentiation in the courses of the School of Mines into four groups, as follows:

- Group I.—Metal Mining.
- Group II.—Coal Mining.
- Group III.—Metallurgy.
- Group IV.—Mining Geology.

By courtesy of President Alderson and the individual members of the faculty, we were advised of the changes proposed, and schedules of the proposed curriculum were forwarded to us for examination and comment.

After some preliminary correspondence between the various members of this committee and the president and members of the faculty, an informal smoker was held in Denver on August 13, at which gathering a considerable number of the members of the Alumni were assembled, and this subject received sufficient discussion to show a general antipathy of the graduates toward a differentiation of courses and particularly toward a further differentiation of degrees. The establishment of a five-year course appeared to meet with general disfavor among the graduates at that meeting.

On the day following the smoker, namely, on August 14, four members of your committee met at Mr. Carstarphen's residence, those present being Messrs. Cohen, Carstarphen, Hornbein and Weiss. At this meeting this subject was thoroughly discussed and the proposed schedule of studies was carefully gone over by your committee.

Especially were pains taken to compare the schedules of studies in the proposed different groups and in a general way with the curriculum of former years. It was the unanimous conviction of your committee that the proposed differentiation of courses as proposed in the different groups was in effect but an inconsiderable divergence from the courses heretofore prescribed. It appeared, upon examination of the courses, that the fundamental branches of engineering, such as mathematics pure and applied, chemistry and metallurgy were given ample room and that the courses offered so far as could be judged from the curriculum, deserved at least respectful comparison with that of other technical institutions of recognized merit. Your committee agreed to recommend the following, as a result of this conference:

1. That one degree, namely, that of E. M., alone be given.
2. That a slight flexibility of courses might be allowed in the Senior year.
3. That a four-year course leading to the degree B. S. and a five-year course leading to the degree of E. M. was not practicable or advisable at this time.

Your committee then adjourned, expecting to pursue investigations further by correspondence and personal interviews.

No further meetings were held by this committee until October 1, on which date the following three members, Messrs. Bulkley, Cohen and Weiss, met at Mr. Bulkley's office in Denver, at which meeting we were fortunate in securing the attendance of President Alderson, who explained further the proposed changes, and related to the members of this committee that the new plan had been agreed upon at a faculty meeting which had been held a few days prior to this date at the School of Mines. The schedule of fixed and elective courses was gone over in some detail at this meeting and after considerable discussion of the relative merits of optional and fixed courses and specifically of the needs of the graduates from our institution, the committee adjourned with the following fundamental convictions:

1. That the range of fixed courses, as outlined in both Junior and Senior years, together with the number of electives required, could not permit a student to choose a snap course leading to a degree.
2. That the difference in the courses proposed was not wide enough to prevent the student having taken one of these groups from taking up the work in another group entirely after leaving the institution, provided such student had an ordinary amount of adaptability and energy, without which he could not hope to succeed under any conditions.
3. That the proposed scheme of allowing students to select certain specific sub-

jects would in many cases prove helpful to such student. First, because his increased interest in such subjects would cause him to put forth special efforts towards success in that direction; and second, because it appears that in many instances the student has certain prospects before him during the Senior year at least pointing out their utility to him after graduation.

Your committee feels convinced that the president and also the faculty of the institution have seriously at heart its welfare and future standing, and so far as can be judged from the schedule of courses, as presented in the latest catalogues and in the revised scheme, there can be no room for idlers and loafers in this school. We feel particularly gratified that the fundamental courses of engineering, such as mathematics, physics, mechanics, chemistry and metallurgy, above referred to, are given the space which they deserve and need, and it is not seen how a student who leaves an institution well equipped in these fundamental branches can fail to succeed in later years, provided he possesses ordinary talent and willingness to learn and to work. In the light of such information as is available your committee is not in sympathy with any effort at this time to establish a four-year course leading to the B. S. degree and a five-year course leading to the degree of Engineer of Mines or Engineer of Metallurgy, for these reasons:

1. It is believed that many students would simply take the four-year course and would fail to return to the institution for the Engineer's degree.
2. While it is recognized that there is much material that must remain untaught in a four-year course, it is believed that the student, who has thorough and proper preparation in the fundamental courses will find no difficulty in adapting himself to the needs of the Engineering profession after leaving the institution.
3. There would be many students who would be unable to choose the proper elective and post-graduate subjects, by reason of the uncertainty of the exact nature of their future requirements.

The above conclusions were reached by your committee at the close of its second session in Mr. Bulkley's office on October 1, 1910. Various untoward circumstances beyond anyone's control made it impossible for your committee to meet again until January 16, 1911. On this date all members met in Mr. Bulkley's office at 10:30 a. m. and remained in session during the office hours of the entire day. At this meeting Mr. Carstarphen presented a report on the subject of five-year engineering courses, which feature Mr. Carstarphen had volunteered to investigate specially at our session on August 14, 1910. Mr. Carstarphen's report is herewith quoted:

A Five-Year College Course—Names of Colleges.

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Dean A. Marston (see bibliography), in his article on a five-year engineering course of study, speaks of the great movement in the liberalizing and broadening of professional technical education by the establishment of five- and six-year courses of study in many of the engineering schools, and states that California, Columbia, Cornell, Iowa State College, Massachusetts Institute of Technology, and Wisconsin have adopted optional five-year engineering courses, and the University of Minnesota has adopted a compulsory five-year course. The writer adds: "Nebraska and Michigan are adopting six-year optional courses, and most engineering schools located at universities have arrangements whereby a student can obtain both an A. B. or B. S. and an engineering degree in a total of six years of work."

This movement appears to have gained the approval of many prominent engineers from whom Mr. Marston quotes in the above mentioned paper, and he further says: "It is not merely that the highest engineering work calls more and more for men of the broadest executive abilities. There is, besides, an increasing demand for technically educated men for superintendents, managers, secretaries, directors, presidents, and owners of all large manufacturing and commercial enterprises, light, power, and transportation companies. In addition to this, there is need for men with engineering training in the public affairs of every community and even in the councils of the nation itself."

For further detailed information regarding the above subject the bibliography appended to this report may be consulted.

From the perusal of such literature as Mr. Carstarphen found available on the subject of advanced engineering education, it appeared that while the movement towards establishing five- or six-year courses in engineering colleges is generally favored by the leading members of the profession, the letters written by these men indicate that they are not so much in favor of the extension of the technical training as in broadening the engineering students along academic lines. In other words, it is generally recognized that many engineering graduates find themselves at a considerable disadvantage because of a lack of general culture; lack of ability to write reports and papers, and address audiences in such language as would demand respectful attention, and lack of dignity and presence so essential to those who would occupy the higher executive positions in commercial, manufacturing and industrial enterprises.

While there is much talk about this being an age of specialization, your committee

believes that the needs of the engineering graduate are little, if any, different from that which they were some ten years ago. It is useless to assume that the engineering college can turn out specialists and finished engineers because such degree of perfection can only be attained by a harmonious combination of practice and theory. It is believed that professors, as a rule, are apt to fail by being over zealous in trying to lead the student into the intricacies and specialties of the various sciences, which are often beyond the student's ability to grasp. At the same time the student frequently lacks preparation in the primary courses of such subjects as mathematics, theoretical and applied, which may appear stale and commonplace to the professor. Your committee would, therefore, emphasize that the chairs in fundamental subjects be held by broad-minded and fundamentally, painstaking professors with an ample appreciation of the practical limitations of their subjects and the general needs of the students.

The above is not to be considered an arraignment of present methods practiced in our institution, but it is intended to point out the dangers which do beset all technical institutions today and which cannot be too strongly guarded against.

In conclusion your committee maintains and recommends the following:

1. That no engineering school can turn out finished engineers or specialists and that the various courses of study should be arranged with this basic idea in mind.
2. That a moderate flexibility of courses be allowed in the Junior and Senior years, the optional courses not to exceed 20 per cent. of the compulsory subjects.
3. Your committee recognizes that the establishment of elective courses tends towards the differentiation of degrees to be conferred. We are in favor of giving one degree, that of E. M. (Engineer of Mines) only, upon the completion of any prescribed course satisfactory to the faculty.
4. From the investigations of your committee it appears that those institutions which have established engineering courses of five years, or greater length of time, have done so to meet the demands of greater cultural requirements, rather than the amplification of the engineering branches. We believe that the fundamental subjects of Mining Engineering can be satisfactorily presented in the usual four-year course. Realizing that in conformity with the experience of other technical institutions our graduates would be benefited by a raising of the standard of general culture, we recommend that only graduates from such high schools be accepted as maintain a satisfactory standard in academic subjects, or such other candidates who pass a satisfactory examination in these branches.
5. Your committee specifically recommends that athletics be kept under the control of the faculty to the end that athletics

may be kept free from professionalism, or other unwholesome influence which would tend to impair the efficiency of the school.

6. All members of the Alumni should make every reasonable effort to visit the school as frequently as practicable and to make themselves familiar with the character of subjects taught, the manner and methods of teaching practiced, and maintain as close an acquaintance with the faculty as possible. In this way many helpful ideas and suggestions could be advanced, particularly by the older graduates, and the influence thus exerted would be a powerful factor for good. The President and Faculty would appreciate such interest and evidence of good will and would feel encouraged to put forth their best efforts in their various lines. We feel that no matter what curriculum may be outlined for the various courses or what plans may be agreed upon, the success of the institution in turning out graduates who will be a credit to the school depends altogether upon the spirit with which such plans are executed, and that must forever remain with these officers of the institution. Very respectfully,

ANDREW WEISS, '09.
JULIUS HORNBEIN, '05.
LOUIS COHEN, '97.
F. C. CARSTARPHEN, '05.
FRANK BULKLEY, E. M.

Committee on Instruction of the Colorado School of Mines Alumni Association.

BIBLIOGRAPHY TO ACCOMPANY AUXILIARY REPORT.

(By F. C. Carstarphen.)

CALIFORNIA, UNIVERSITY OF.—Five-years' course. Register, 1908-09. p. 69-70.

CORNELL UNIVERSITY.—Civil Engineering, five-years' course; mechanical engineering, five-years' course. Register, 1909-1910. p. 424,429-30, 468.

DERLETH, CHARLES JR.—The length of an engineering course. In: Society for the Promotion of Engineering Education. Proceedings, 1909. p. 134-41. Discussion. p. 142-71.

FLETCHER, ROBERT.—The five- and six-year courses in engineering schools. In: Society for the Promotion of Engineering Education. Proceedings, 1909. p. 121-27.

FROST, HARWOOD.—A proposed course in general engineering. In: Society for the Promotion of Engineering Education. Proceedings, 1908. p. 98-112.

IOWA STATE COLLEGE OF AGRICULTURE AND FINE ARTS.—Five-year courses. Catalogue, 1919-1911. p. 26.

MARGRUDER, WILLIAM T.—The five-year courses. In: Society for the Promotion of Engineering Education. Proceedings, 1909. p. 128-33. Discussion. p. 142-71.

MARSTON, ANSON.—Five-year engineering course of study. In: National Education Association. Journal of proceedings and addresses, 1908. p. 1181-1186.

MINNESOTA, UNIVERSITY OF.—Five-year course. General catalogue, 1908-1909. p. 11-16.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY.—Five-year undergraduate courses. Bulletin-Programme, June, 1910. p. 36-38.

REWARD SYSTEM IN MINES.

Colorado Fuel and Iron Company Lays Plans for Improvement in Its Properties.

A merit system of rewards for fire or pit bosses who make the best showings in the mines of the Colorado Fuel and Iron Company is one of the important features of the new plans announced by the corporation for the improvement of mine conditions. Moreover, committees from one mine will visit others and offer suggestions for improvements. The officials also have a plan providing for a competent engineer appointed by the governor to make periodic inspection trips through their mines.

We can not, of course, all be handsome,
And it is hard for us all to be good;
We are sure, now and then, to be lonely,
And we don't always do as we should.

To be patient is not always easy,
To be cheerful is much harder still,
But at least we can always be pleasant,
If we make up our minds that we will.

And it pays every time to be kindly,
Although you feel worried and blue;
If you smile at the world and look cheerful,
The world will soon smile back at you.

So try to brace up and look pleasant,
No matter how low you are down,
Good humor is always contagious,
And you banish your friends when you frown.

'Tis clear why folks laugh in their sleeve,
Since all the world's aware,
Or just by thinking must perceive,
The funny bone is there.

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VOL. 1. FEBRUARY, 1911. No. 5.

"The time has come," the Walrus said,

"To talk of many things:

Of shoes—and ships—and sealing wax—

Of cabbages—and kings—

And why the sea is boiling hot—

And whether pigs have wings."

On January 5, 1911, Jay Lonergan resigned as assistant secretary of the Alumni Association, editor and manager of the Colorado School of Mines Magazine, and manager of the Capability Exchange, to accept a position as professor of mining at the Imperial University, Pekin, China. Mr. Lonergan's resignation was accepted and the appointment of Orville Harrington, '98, to fill the vacancy, was officially confirmed at a meeting of the Executive Committee, held January 19, 1911. Mr. Lonergan devoted his whole time, from about the middle of September, 1910, until he resigned, to starting this magazine and placing what men he could in positions. The original agreement was that he receive \$70 per month, \$20 from the Alumni Association and \$50 from the Board of Trustees, and all the receipts from advertisements in the magazine, but he sacrificed considerable

financial return in the best interests of the Association as he refused to take the money received from advertisements until the magazine should reach a point where the total receipts exceeded the total expenses. That point was reached about January 1st, too late to do him any good. The present editor wishes to express his appreciation for the condition in which Mr. Lonergan left affairs.

The Policy of the Magazine: This magazine is being run for, and by, its subscribers and it is our aim to make it a magazine that you will be glad to see come through the mails and that you will want to read clear through as soon as you get it. We are bound by no precedents; we do not intend to get into any old ruts; and we will not even follow the beaten paths if they do not appear to be running our way. The way we want to run this magazine is to keep together, work together, play together, and for diversion, "scrap" a little among ourselves, but do not ever get mad about it. "Smile and push." If you do not like any article in the magazine or do not see one of the kind you would like to see in it, first look up your cash account and see if you have remembered to send in your subscription; if not, attend to that at once. Then sit down and write us about it, jump all over us or the person who wrote the article or did not write it, and after you have sealed and stamped the letter, take up your pen again and make a good, big start on an article of the kind you WOULD like to see in the magazine; finish it as soon as you can and do the subject full justice; send it to us and we will print it. We will print your letter also. Personally you can not offend us by anything you can say. The only way you can hurt our feelings is to sit down there in your little corner of the world, with your hands in your pockets and a cynical sneer on your face, and say: "The Alumni Association has never amounted to anything in the past and I don't believe it will now," and so forth and so on. "Let the dead past bury its dead." I will tell you right now there is not going to be any "ifs" or "buts" about this at all. This IS going to be a success and unless I show enough energy and intelligence to make you make it a success I will simply have to make way

for someone who CAN make you make it a success. Some have criticised H. H. Emrich's letter printed in the January number, but we must confess that we rather like it. You see, he DID write it; he has already delivered some lectures or "talks" to the undergraduates, just as you are going to do, through this magazine if you can not in person; he has promised to contribute articles from time to time; he has given us an opportunity, by writing to us, to convince him that we can do something for him also, and, last but not least, he had his brother, who is a Junior here, call and pay for a year's subscription, a matter that has so far slipped the minds of one or two who criticised him. We feel sure that when Mr. Emrich reads his own letter in print and thinks the matter over, he will realize how much better it would be to join and help us from the inside than to stay out and criticise.

The Capability Exchange. Some are objecting, that the fees are too high. Considering the limited number of possible applicants, graduates and undergraduates, we have to work for, we think the trouble is more apt to be the other way. However, the fees are in every case as low as the lowest charged by any of the reputable technical employment agencies in Denver, even lower than those charged by the Y. M. C. A. of Denver, which claims to charge only enough to barely pay expenses, and they make you sign a sight draft on your future employer for the fees, along with your application. We intend to make this branch a very important one and urge every one, no matter how high and exalted his present position, to fill out a blank and give us a chance to get him a better position. It won't cost you anything but a two-dollar deposit (returnable at the end of the year if you request it and we have not placed you during the year), and won't even cost you that if you are, or become, a member of the Association. We probably will be able to help you materially sooner or later and we most certainly will not have time to hunt you up after the position comes to us to be filled. We just lost a good job for some one of the older graduates because we did not have anyone on our lists with the kind of experience required. Right in this connection, here is

some more plain talk. The better jobs are going to the older graduates who have had the experience necessary to hold them and the younger graduates are going into the vacated places whenever possible or into places they can hold and where they can get the experience. We know personally of some cases in the past where men with little or no practical experience were put in responsible positions where experience was very necessary and the result was disastrous, both to the man himself and to the reputation of the School. Of course we will make mistakes, but we will make as few of that kind as possible. Be sure to let us know at once of any vacancy or new position that you may hear of or of which you may get the faintest clue. It may help some one very much.

The Catalog: We wish to call attention to the new catalog of the School and the important changes in the schedule. Read what Dr. Alderson and the Committee of Instruction of the Alumni Association have to say in regard to the changes and see that you get a copy of the catalog and read it carefully yourself. We understand that the catalog will be ready for mailing at about the same time as this copy of the magazine. If you do not receive a copy promptly let us know and we will see that you do get one. We will be pleased to print any letters discussing the subject.

The Undergraduates: We are running this magazine just as much for you as for the graduates and we want you to help us make it a success, not only by subscribing to the magazine, but by filling out the blank applications for the Capability Exchange, and by giving us School notes to print. Come in and see us. We want to become acquainted with each and every one of you personally, but, if we started out to hunt up each and every one of you we would be the rest of the year getting all the way around, and probably, in most cases, would call on you just when you were the busiest with some of your work. So, whenever you have a few minutes to spare, drop in and make yourself known. We hope to be able to place every one of you who wishes work during the summer vacation in some kind of a job and to find you a place somewhere in the mines, mills or engineering corps when you graduate. Come in and give us

the School news, tell us about your fun and troubles. We want your views on the magazine, even if they are not complimentary. And never, for an instant, get the idea into your heads that we will ever carry any information to the faculty or trustees that will cause you any trouble. We understand that, when the Alumni Association was considering starting this magazine, a committee representing the entire undergraduate body visited the president of the association, Mr. Titsworth, and promised the loyal support and help of the undergraduates and that each and every one of you would subscribe to the magazine if we would start it. We are trying to do our part and expect you to live up to your part of the agreement. At the time this was written (January 21st) we had only two of your number on our subscription list, Ed. M. Fields, '12, and Tsung-Te Kao, '14, and we are printing in this number the first article that has been submitted by any of you, "The Far Eastern Problem," by Ye-fah Chen. Send in your good jokes, your new

songs, your subscriptions, your news items and your personals.

Alumni Members: Do not forget about the second annual midwinter banquet of the Association, to be held at the University Club, Denver, evening of February 25th at 7:30; price \$3.50. Everybody come; plenty to eat, drink and smoke, and some good addresses or talks by prominent mining men. Junius W. Johnson is chairman of the committee in charge. Take a day or so off and come prepared for a good time.

The May, 1910, S. S. M. Bulletin contains several valuable articles. It will be sent free to all Alumni Association members who care enough for it to send us a postal card, also any back numbers free if we have them on hand. Please write if you want any as we wish to dispose of them.

United States Senator Charles J. Hughes, Jr., died at his home in Denver, January 11th. He was an authority on mining law and was one of the brilliant men of the state.

Athletic News.

MINES DEFEATS STATE IN FIRST GAME OF BASKETBALL

Speed of Golden Men and Their Accurate Goal Work Win for Them. Final Score is 26 to 23.

Golden, Colo., Jan. 20.—The Miners won the opening game of the Colorado intercollegiate season from Colorado University by a score of 26 to 23, in the School of Mines gymnasium tonight. The game was fast and exciting throughout.

The Miners more than overcame the advantage in size which Boulder had by the speed of their playing. Incidentally the Mines faculty decided that basketball is an intercollegiate sport at the Mines, in spite of the rulings of the Rocky Mountain Conference, by insisting that the eligibility rules be strictly enforced. This kept Tolman, the Freshman star forward, from the game at the last minute. This was the last day of the first semester during which Freshman are barred.

Captain Kissock shifted Woolf to forward and used Rockwood at guard. Davis was the star. He played one of the fastest and best games ever seen at the Mines, both in defensive work and accurate basket shooting. Captain Kissock played fast and consistent basketball and kept his team working together. Toughy Woolf showed the same

brilliant work that made him All-Colorado guard last year.

McFadden of Boulder scored most of Boulder's points on long shots to baskets. This method of playing, however, lost the game for Boulder for the University team was forced to resort to long shots and passes. Boulder scored the first point after nearly five minutes of exciting play when Cresto threw a foul. The Miners soon took the lead and were never headed. The first half ended with the score of 8 to 7 in favor of the Mines. The Miners made the game safe in the second half by two pretty baskets by Davis, followed by baskets by Woolf and Kissock.

A large crowd attended the game, including a number of rooters for the University. The score: Mines 26, University of Colorado 23.

MINES.	U. OF C.
Davis.....r. f.	Cresto
Woolf.....l. f.	McFadden
Kissock.....c.	Taylor
Rockwood.....r. g.	Andrus (Capt.)
Litchfield.....l. g.	Accola, McNeil

Baskets: Davis 4, Kissock 2, Woolf 5, Cresto 1, McFadden 6, Taylor 2, McNeil 1. Free throws: Kissock 4, Cresto 3.

Referee: Roberts; umpire, Hamberger. Time of halves: 20 minutes.

College Notes.

FIRST AID TO THE INJURED.

On January 9th Dr. M. J. Shields of the International Red Cross Society, assisted by Mr. Harvey from the United States Mine Rescue Car No. 2, gave a very interesting lecture on the above subject. The lecture was attended by all the students in the assembly room of the Simon Guggenheim Hall. They showed the work the Red Cross Society is doing in training mine foreman, bosses and the miners themselves, to bandage and handle injured men before they can get medical attention. This is done with no supplies or equipment beyond the small Red Cross packages, smaller than sardine cans, and a few pieces of board or other available material that may be picked up around any mine. Each Red Cross package contains a triangular bandage of strong muslin, an aseptic pad bandage of cheesecloth and a safety pin.

Mr. Harvey had six or seven of the students on the platform and under his directions they put the bandages on one of their number, who was supposed to be very much smashed up, broken thigh, ribs, shoulder blade, etc., to the great delight of the audience. It was really surprising to see what good bandaging could be done with such simple material. Then Mr. Harvey showed the proper method for inducing artificial respiration, working on another "patient." When he tied the "patient's" tongue out of his mouth with an aseptic bandage so that it would not block the air passage to the lungs, the audience very promptly yelled "Speech." They also tried to persuade Mr. Harvey to operate on "Prexy," but were unsuccessful. Dr. Shields said that it was really better to pull the tongue out of the mouth with the safety pin.

Later Dr. Shields and Mr. Harvey showed how to make a good stretcher out of two jumpers and two pieces of old inch-and-a-half pipe about seven feet long. Each man put on a jumper, buttoned all but the top button and unbuttoned the sleeve buttons, then one man took one end of each piece of pipe in either hand and leaned over while the other man "shucked" the jumper off over his head pulling the sleeves down over the pipe also, when he reached the cuffs. The same performance was repeated at the other ends of the pieces of pipe with the other jumper. Then they had a strong stretcher which they tested with the heaviest man on the platform, but refused to "drop him" when requested to do so by the audience.

We think it would be a fine thing if there was a law in every mining state compelling every mine foreman and mine boss to pass an examination on this subject before he would be allowed to hold a position as boss. We have seen men, very badly injured, carried out of the coal mines, a mile or more,

in empty coal cars, at the tail end of a coal trip. They were then hauled a couple of miles in an open express wagon, with only a few old quilts around them, when the thermometer was below zero, before receiving any medical attention. It is needless to say that many of them died as a result of the shock.

Y. M. C. A. NOTES.

The State Convention—Fort Collins.

Interest just now is centered in the state convention of the Young Men's Christian Association, which is to be held in Fort Collins, Colorado, February 9 to 12, inclusive. The first session begins Thursday evening at 7:45, and the convention closes Sunday evening.

Delegates will be present from all parts of Colorado, representing all branches of the Christian Association movement—Student, City, County, and Railroad Associations. It is expected that 150 students will be present from the colleges and high schools of Colorado. These men will be the guests of the association at the Agricultural College, and entertainment will be provided for them. All other delegates will arrange for their own entertainment. The expense of the student will be limited to carfare, and a rate of one fare for the round-trip has been procured over the C. & S. from Denver and points south. This will keep the necessary expense below three dollars for students leaving from Denver, and should make it very easy to get a large delegation from all the schools in the state.

The leadership of this convention will be unusually strong, especially when one considers that we are so far from the headquarters of the Christian Association movement. Among the speakers and leaders of the convention will be Charles A. Barbour, D. D., of New York, one of the strongest of the late accessions to the work in the East; Mr. I. E. Brown, of the International Training School in Chicago; Mr. E. W. Peck of Minneapolis, a member of the famous association quartette, who will lead the singing; Mr. A. G. Knebel, of the International committee, New York; Mr. A. J. Elliott, better known as "Dad" Elliott to the collegemen of the United States, and particularly those of the West, because he travels from Ohio to the Pacific Coast; and Mr. B. C. Wade, the new State Secretary of Colorado. In addition to these men, there is a possibility that Mr. E. T. Colton, who has been traveling in South America in the interest of the Y. M. C. A., may be present during part of the convention.

The School of Mines has always been well represented at these state conventions in

the past, and it is hoped that we can send twenty-five men to represent us at this gathering. Our association is, perhaps, the largest student organization in the State of Colorado, and for that reason, if for no other, we should have the largest delegation at Fort Collins. It is hoped that every man who is interested in this great work will make a determined effort to be present. There will be two sessions in which the students will meet by themselves, in order to discuss their particular problems, and there will be a large complimentary banquet given to all delegates Saturday evening. This banquet is always one of the most enjoyable features of the convention.

The Next Entertainment.

February 3rd is the date of the third number of the popular Entertainment Course, and the attraction is the Gertrude Miller Concert Company.

This company is composed of four people, two ladies and two gentlemen, all of whom are finished artists in their particular fields. Miss Gertrude Miller, reader, is easily the leader of this strong company. She is ranked next to Miss Katherine Ridgeway, who has led her profession for many years, so we need have no fears, when we attend this entertainment, that we will be compelled to listen to an amateur. She comes to us

with the strongest of endorsements as to the very high class of her work.

Miss Miller's supporting company comprises three very remarkable musicians. Miss Edna Bentz, pianist, is described as a real musical genius, one who has been before the public since a mere child of five years. She plays some of her own compositions together with the works of the old masters, in a way that will delight the most exacting critic.

Mr. Ralf Hammer, the Scandinavian tenor, although only a short time in America, has made an emphatic success wherever he has appeared. He is one of the greatest voices on the concert stage today. Although by nature and training especially adapted for operatic work, Mr. Hammer's interpretation of the songs of the North, such as the Grieg songs, is second to none.

As a fitting associate of these cultured musicians we will have Mr. Josef Konecny, the Bohemian violinist. Mr. Konecny was born in Vienna and has studied under such renowned teachers as Kocian and Savecik (teacher of Kubelik). His playing is that of a real lover of music, one in whose heart the melodies are reproduced before given out by his instrument.

No one should miss this entertainment if they like good music.

The Alumni.

PERSONALS.

'97.

Floyd Weed is established as consulting mining engineer in Denver. His address is 467 Emerson Street, Denver, Colo.

John Gross of the firm of Draper & Gross, mining engineers, 746 Equitable Building, Denver, Colo., has gone to Durango, Colo. Mining business in the La Plata Mountains.

'98.

Friends of Ralph Davis, of Davis & Mueth, leading caterers of Colorado Springs, will be sorry to learn of his mother's death. We extend our heartfelt sympathy.

O. R. Whitaker became the father of a baby boy about the first of December.

'99.

Frank W. Royer has established himself as consulting mining engineer at 522 Mutual Life Building, Mexico City, Mexico.

Andrew Weiss visited the school and the assistant secretary recently.

W. D. Waltman is resident engineer and in charge of all construction work for the Costilla Estates Development Company, which owns 548,000 acres of valuable land in Costilla County, Colo., and Taos County, New Mexico. The irrigation projects, already under way, include a chain of reservoirs, the largest of which, "The Sanchez Reservoir," will have a storage capacity of

104,000 acre feet. Over two million dollars is being expended on these various irrigation projects.

Mr. Waltman resides in a splendid new bungalow in San Acacio, Colo., one of the company's towns on their new railway, the San Luis Southern. During the past year he has had an average of 28 men in his engineering parties, making it the largest private irrigation project in the United States.

Mr. Waltman recently spent five years on the Panama Canal work, three years as superintendent of construction on the famous Culebra division, and two years as superintendent and an assistant division engineer on the Atlantic division, especially detailed to construct the crushing plants and open up the quarries at Porto Bello (an island in the Caribbean Sea, 18 miles from Colon), which will furnish all the crushed stone for the locks at Gatun. His present postoffice address is San Luis, Colo.

Lester S. Grant, after spending two years in Peru as general manager of the Inca Gold Mining Company, has returned to the Cripple Creek district and is chief engineer of the Isabella and Empire State Mining Companies. He resides in Victor and is the proud possessor of two splendid boys—Bob, 8 years old; and Dick, born on December 14, 1910.

Arthur R. Townsend, who has headquar-

ters in New York City, was recently a visitor in the Cripple Creek district where he inspected the Portland & Independence mills. Mr. Townsend has been studying smelters and cyanide mills in the United States and Mexico for the past 18 months with the ultimate view of publishing a textbook on the subject. The explorations and articles by Mr. Townsend concerning the famous natural bridges of Utah created most favorable comment in scientific circles.

(These are the kind of personals we like to see. W. D. Waltman sent us the last three. Wake up! Don't let '99 beat you out this way! Don't be bashful! Tell us about yourself or of anyone else about whom you hear.)

'00.

Frank Drescher became the father of an 8-pound baby boy January 10, 1911.

'01.

Junius Ward Johnson and Miss Julia May Tebbs were married December 25th at Salt Lake City, Utah.

F. C. Bowman, who is established as a mining engineer in Denver, visited the school and assistant secretary. He has a wife and two fine children, a boy of four and a baby girl. He is having some ore tested at the school.

'05.

Edward M. Rabb, Jr., chief mining engineer Moctezuma Copper Company, Pilares de Nacozari, Sonora, Mexico, was in Denver last month to attend the funeral of his father. Returned to Mexico January 6th.

Homer D. Ford, superintendent Gilson Asphaltum Company, Dragon, Utah, has recovered from a severe attack of typhoid fever.

Arthur C. Terrill is general secretary of the Y. M. C. A., Eugene, Ore.

John I. Gardner is now mill superintendent for the Vanadium Mines Company, Custer, New Mexico.

C. W. Badgley has recovered from an attack of lead poisoning. Visited the school and the assistant secretary recently.

W. J. Gilbert visited the school and the assistant secretary recently.

'07.

A. C. Norton is making the final estimate on the Model Land and Irrigation Company project, near Trinidad, Colo.

C. G. Warfel has nearly finished his report and estimates on the Model Land and Irrigation Company project, near Trinidad, Colo.

George M. Ross visited the school and the assistant secretary recently.

'09.

De Mont. G. Miller is the father of a baby girl.

ALUMNI MEETING.

The Executive Committee of the Alumni Association met in the office of F. S. Tits-

worth, president, on January 19th. The officers present were F. S. Titsworth, president; F. C. Steinhauer, treasurer; J. W. Johnson, T. P. Ellis and L. B. Skinner, members of the Executive Committee, and Orville Harrington, assistant secretary. The meeting was called to consider the resignation of Jay Lonergan as assistant secretary, and the appointment of his successor. Mr. Lonergan's resignation was accepted, to take effect January 1, and Orville Harrington was appointed to fill the vacancy. The report of the nominating committee, appointed at the last meeting to select three names to be submitted to the entire Alumni body, for their choice as Alumni member of the Board of Trustees of the School of Mines, was approved and the ballots ordered sent out. The Executive Committee also decided to hold the second annual midwinter banquet of the Alumni Association at the University Club, Denver, on February 25th, at 7:30 p. m.; price to be \$3.50 per plate, including everything, decorations, dinner, announcements, etc. Three or four prominent men will be invited, who will deliver addresses after the dinner. Junius W. Johnson was appointed chairman of the Committee on Arrangements with power to call on any other members to advise and assist him.

NOTICE.

The Alumni Association has for some time been trying to locate several of the graduates. Some of these have not sent in their address for several years. If any of the readers of the magazine know the whereabouts of any of the following men, they will be helping the work along by sending what information they can to the Assistant Secretary at Golden:

Walter J. Atkinson, '96.

Albert Berry, '05.

Charles E. Breed, '01.

Henry R. Evans, '00.

Charles R. Ewing, '00.

Louis D. Fry, '03.

F. A. Goodale, '10.

Gilbert E. Jewel, '93.

Fred G. Kelley, '99.

John G. May, '01.

William E. Newman, '96.

S. B. Patterson, Jr., '06.

W. B. Phelps, '07.

Charles D. Root, '08.

Enrique A. Schuman, '97.

Burt C. Stannard, '95.

Joseph J. Weisz, '09.

Charles E. Wheeler, '94.

Robert M. Wheeler, '08.

THE ATHLETIC COLLEGIAN.

He knows his football thru and thru;

His other books he skims,

He cuts the higher branches to

Improve the lower limbs.

LEADVILLE'S CELEBRATION OF THE NEW DISCOVERIES OF ZINC CARBONATES.

On January 25th and 26th the mine operators and citizens had a monster celebration, with some very unique features, in honor of the rejuvenation of the camp, due to the recent discoveries of zinc carbonate and silicate throughout the district. On Wednesday, January 25th, a dinner was served to hundreds of mining men, mine operators, geologists, prominent speakers and newspaper men, in a stope on the Western Mining Company's ground, 1,000 feet below the surface and 400 feet from the main shaft. S. D. Nicholson, as manager of the Western Mining Company, was the host. The stope was large enough to accommodate a thousand people and was well lighted and appropriately decorated. Later in the day other mines were visited and in the evening there was a banquet, followed by a ball and smoker, in the Elk's Hall. The 26th was spent in sightseeing and visits to the various mines of the camp. The recent discoveries of carbonate and silicate of zinc in Leadville promise to at least double the life of the camp.

NEW ACCESSIONS TO THE C. S. M. LIBRARY.

American men of science; Vol. 2.

Analytical chemistry; 2 vols.; F. P. Treadwell.

Annual report, Vol. 34; Indiana Geological Survey.

Applied mechanics; Ed. No. 9; Gaetana Lanza.

Art of road making; Harwood Frost.

Bacon is Shakespeare; Sir Edwin Dunning-Lawrence.

Chemical News, Vol. 1 to date.

Chemische kristallographie; Vol. 3; P. Groth.

City roads and pavements; W. P. Judson.

Civil Engineer's Pocketbook, Ed. No. 19; J. C. Trautwine.

Concrete-steel Construction; Emil Marsch.

Construction of graphical charts; J. B. Peddle.

Design of simple roof trusses, Ed. No. 2; M. A. Howe.

Design of simple steel structures; C. I. Morris.

Economics of road construction; A. P. Gillette.

Elements of Mechanism; P. Schwamb and A. L. Merrill.

Gold dredging in California, Rev. Ed.; California State Mining Bureau.

Handbuch der anorganische chemie, Vols. 1-5; Gruelin-Krant.

History of the telephone; H. N. Carson.

Hutte taschenbuch fur eisanhutenleute; Akademie Verein Hutte.

Hydraulic tables; G. S. Williams and A. Hazen.

Illumination and photometry; W. E. Wickenden.

Lagerstätten der nutzbaren mineralien; F. Bevschlag and others.

Leitfaden der graphischen chemie; R. Kreman.

Machine design; F. R. Jones.

Manufacture of Portland cement; P. C. H. West.

Metallography; C. H. Desch.

Mine gases and explosions; J. T. Beard.

Mineral Industry, Vol. No. 18.

Mining Rights, Ed. No. 14; R. S. Morrison.

Paints for steel structures; Houston Lowe.

Plane surveying; J. C. Tracy.

Pocket handbook of blowpipe analysis; G. M. Butler.

Pocket handbook of minerals; G. M. Butler.

Practical shaft sinking; Francis Donaldson.

Principles of wireless telegraphy; G. W. Pierce.

Proceedings; Vol. No. 37; U. S. National Museum.

Road preservation and dust prevention; W. P. Judson.

Rock drills; E. M. Weston.

Rules for recovering coal mines after explosions and fires; W. E. Garforth.

Spanish and English technical terms; R. D. Monteverde.

Standard field tables; U. S. General Land Office.

Steamboilers; C. H. Peabody and E. F. Miller.

Structural details in heavy framing; H. S. Jacoby.

Telephonology; H. R. Vandeventer.

Testing for metallurgical processes; J. A. Barr.

Textbook of experimental chemistry; Edwin Lee.

Textbook of Geology; P. Lake and R. H. Rastall.

Textbook of practical astronomy; G. L. Hosmer.

Theory and practice of surveying, Ed. No. 17; J. B. Johnson.

Tobacco and its deleterious effects; C. E. Slocum.

Transactions, Vol. 40; American Institute of Mining Engineers.

Transactions, Vols. 30 and 31; American Society of Mechanical Engineers.

Transactions, Vol. 19; Institute of Mining and Metallurgy.

Transportation in Europe; L. G. McPherson.

A FRESH PSALMPL OF LIFE.

Great men's lives used to remind us
We could make our lives sublime,
And departing leave behind us
Footprints on the sands of time.
But at him who's making footprints
Now the world, a-riding, laughs,
Since upon the sands, in motors,
Great men write their "auto"graphs.

BLACK LABELS MEAN PERFECTION



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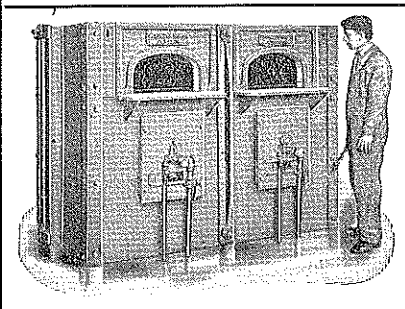
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Lower Yellowstone Irrigation Project, Montana.

Robert S. Stockton, '95, Resident Engineer in Charge.

Gilbert L. Davis, '99, Construction Engineer.

Location and Source of Water Supply.

The Lower Yellowstone project, as its name suggests, is situated near the mouth of the Yellowstone River, in Northeastern Montana and Western North Dakota. The project embraces a strip of land extending 65 miles along the west bank of the Yellowstone River, and about five miles broad at its widest point.

Water for the irrigation of this land is diverted from the river at a point fourteen miles northeast of Glendive, Mont. A low diversion dam, 12 feet high and 700 feet long, of stone and timber, is so located that the water can be taken from the river through eleven 5-foot gates in a massive concrete structure. From the headgates the canal runs for several miles through a deep cut and is protected by a bank or dike from overflow due to ice gorges. For the first nineteen miles the canal covers only a few thousand acres of land, but beyond this point the valley is wider and a tract of 7,000 acres below the main canal affords an opportunity to drop the water for its irrigation through a turbine water-wheel operating a centrifugal pump and supplying water to about 3,000 acres of fine land on the Tokna bench. Thirty-six miles below the headworks the canal crosses Fox Creek in a double-barreled concrete siphon 225 feet long. Below this point there is but little difficult construction and the valley widens. Most of the heavy work on the canal is in the first thirty-six miles and includes deep cuts and concrete flumes and culverts for passing storm water over or under the canal.

The Yellowstone River affords an ample water supply, as the low waterflow past the headgates of the Lower Yellowstone Canal is several times the maximum amount required for irrigation of the project lands.

Items of Historical Interest.

In the settlement of nearly all of our country, trappers and traders have been the pathfinders for civilization. They were the first to penetrate Montana, but it was many years after Lewis and Clark had explored the territory and given a new impetus to the fur trade before much was accomplished in the settlement of this region. In 1832 the American Fur Company, of which John Jacob Astor was the founder, established Fort Union at the junction of the Missouri and Yellowstone Rivers, and sent the first steamboat to that point. This post, at the gateway to Montana, holds a conspicuous place in the early history of the State.

About 1860 the discovery of gold called thousands of prospectors into the country, and these men were followed later by others, bringing their families and establishing their homes in the rich valleys. But the Indians fiercely guarded their hunting grounds along the Yellowstone and so the tide of immigration passed on to the west. Only thirty years ago one could stand on a peak overlooking the Yellowstone Valley and see a herd of 25,000 buffalo grazing where today broad fields of grain extend for miles. Trains were sometimes halted for hours while the buffalo went down to the Yellowstone to drink, and in the fall, when the buffalo left for their winter pastures, the stockmen's little shacks stood trembling, enveloped in a cloud of dust, while the buffalo thundered past—not walking, but on the lope—a continuous hurrying procession for three days and three nights. The buffalo hunter was one of the first residents of the valley. One party of hunters, under contract to supply a firm at Buford with buffalo meat, killed as many as seventy animals daily. In a few years the buffalo disappeared from the valley, and

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