When Hoover Greeted Mines Students at National Capitol

Eight School of Mines men on an eastern tour were presented to President Hoover on the capitol grounds. The picture above was snapped at that time. Those in the photo, from left to right, are: Front row—Herbert Hard, Joseph Newton, Congressman Scott Leavitt, President Hoover, Dr. Curtis L. Wilson, Noah Gershevsky and Louis Nuckols. Back row—Donald Mayo, Glen Sigler, John O’Connor and C. Becker Hoskins.

SENIORS GET GREAT RECEPTION

"Mines" Juniors Welcome Their "Masters" Upon Their Arrival from New York City; Seniors Bow

The student body turned out fifty per cent strong and gave a worthy welcoming party to the exalted seniors upon their arrival in Butte last Tuesday.

After some small amount of persuasion, the seniors and, unfortunately, Dr. Wilson, immediately upon their stepping on the station platform were promptly handcuffed and marched by the greatly outnumbering juniors, sophomores and freshmen to a waiting city truck.

The Miles City cowboy objected to this sort of a reception, but seeing that he was outnumbered, and not wanting to crumple his red carnation, he quite willingly took his place among the others.

Such formalities as congratulations and hand-shaking were, of course, dispensed with and the favorite homecoming brass band proved to be anything but a band. Instead, it was a "mixed hand and orchestra" that greeted the proud, grinning seniors. A bass horn, an alto, a few rattling drums, harmonicas, and a piccolo furnished the discordant and "varying" music that led the procession of some 15 or 20 automobiles on the grand parade through the business section of town. Left-hand turns were ignored—and why not? Didn’t Mayor Beadle of Butte ride in the auto next to the handcuffed ones? Didn’t he furnish the truck and the likewise important handcuffs? Much may be said to his credit as a good sport on such occasions sponsored by the Miners.

The seniors in their derbies, spats, and flashy red carnations looked good in the city truck which was all decked with large signs, painted for the occasion.

After the triumphant procession had marched through the business district, the "band" led the way to the school campus, where everyone was greeted by the "loyal" other fifty per cent of the students. Handcuffs were removed and the somewhat late address of welcome was given by Stanley Williams, a junior. His "speech" began like his: "Upon the accomplishment of such a feat as you have, worthy seniors, I, in behalf of the junior class, do present you with this key," etc., etc. The key was then graciously handed to the seniors and they read the following inscription printed on it in large letters: K E Y TO THE CRYING ROOM

Immediately after this all joking was put aside and real congratulations bestowed on Dr. Wilson and the seniors who, withal, took everything in the right spirit always dominant in that class.

DR. THOMSON RETURNS FROM LECTURE TOUR AND A.I.M.M.E. CONVENTION

Dr. Francis A. Thomson returned recently from New York City and Washington, D.C., where he attended the annual meeting of the American Institute of Mining and Metallurgical Engineering as Montana’s delegate.

The attendance of the School of Mines’ entire graduating class at the meeting was one of the outstanding features of the conference and lent considerable prestige to Montana’s importance in the mining world, Dr. Thomson said, and from an educational standpoint the students benefited considerably through their association with the world’s mining leaders.

Received by President.

While at the nation’s capital Dr. Thomson, Dr. Curtis L. Wilson, and the class of eight students were received by President Herbert Hoover, who complimented the boys highly for their great interest in their engineering work.

The splendid opportunity afforded the seniors by this trip, which is the largest trip ever taken by Montana students in the interest of education, will (Continued on Page 4)
Nickel, the Alloy Metal

By Dr. Curtis L. Wilson, '20

Nickel is one of the most widely used metals industrially, but the peculiar thing about it is that as a metal by itself it has but relatively few engineering uses. As a constituent of certain alloys, however, it plays an exceedingly important part in this metallic era, for no other metal forms so great a number of useful alloys as does nickel. It has a strong tendency to form solid solutions with other metals, and the solid solution is quite analogous to a liquid solution, like sugar in water, except that it is in the solid state. Copper, for example, will dissolve nickel, and conversely, nickel will dissolve copper, in all proportions, and the resulting solid alloy is homogeneous throughout. Solid solution alloys usually exhibit remarkably useful properties. It is chiefly because of this tendency that nickel forms so many commercially useful ferrous and non-ferrous alloys.

Over one-third of the total nickel production of the world is used in the manufacture of nickel steel, and another third in the manufacture of alloys in which nickel and copper are the chief components. The nickel alloys may be conveniently divided into five groups: (1) nickel steel, (2) nickel-copper alloys, (3) electrically resistant alloys, (4) heat resistant alloys, and (5) acid resisting alloys.

Nickel Steel. An amount of nickel varying from 2 to 3.5 per cent increases the toughness, strength, and hardness of steel without decreasing its ductility. It does this in a way which metallurgists describe as "refining" the grain; that is, nickel produces a smaller size in the crystals or grains which constitute the structure of the steel, and such fine-grained structure always exhibits more desirable mechanical properties. Nickel is especially valuable in case-hardened steel, for it inhibits the carburizing, but the "core," which otherwise would become coarse-grained at the high temperatures at which the process is carried on, remains fine-grained and tough.

The beneficial effects of nickel are intensified in many respects by the presence of some other alloying element, particularly chromium (0.5 to 1 per cent). Nickel steels with about 0.25 per cent molybdenum are used for case-hardened roller bearings.

Before the World War, from 60 to 75 per cent of the total nickel production of the world was used in the manufacture of nickel steel, for which the chief demand was for armor plate, artillery, guns, and other military purposes. The aggregate production of Armaments Conference in Washington has resulted in a severe slump in the demand for nickel, so that now the world-wide use of the metal is decreased to about one-third of the output. I regard this as concrete evidence of the effectiveness of such conference action, and I have argued that the trend in naval construction is towards the elimination of heavy protective armor in order to increase speed.

The automobile industry is today the major consumer of nickel steel, for gears, shafts, forgings, and case-hardened parts. It is by no means the only one, however, for nickel steels are used in the construction of mining machinery, bridges, bicycle frames, railroad track crossings and frogs, power plant equipment, and machine tools.

High nickel steels, containing over 25 per cent nickel, are also exceedingly useful and possess peculiar properties. They are quite resistant to corrosion and have a low coefficient of thermal expansion. "Invar," with 36 per cent nickel, expands hardly at all with changing temperatures, and is used in the manufacture of fine instruments, such as surveyors' tapes, clock pendulums, and balance wheels in high precision devices and chronometers. "Permalloy," containing 78 per cent nickel, has a remarkable magnetic permeability at low intensities of the magnetic field, and is used largely in the construction of ocean cables, allowing about five times as many signals per minute.

The use of nickel for improving cast iron is likewise rapidly finding favor. Cast iron has usually been regarded as a cheap, inferior material upon which no extra cost should be wasted. Beginners would become coarse-grained at high temperatures, and would crack on cooling. However, engineers are beginning to demand this kind of cast iron. It is likewise rapidly finding favor.

Nickel-Copper Alloys. The most important of the nickel-copper alloys is monel metal, essentially a liquid solution containing 70 per cent copper and 28 per cent copper, with small amounts of iron and manganese. Monel metal is a so-called "natural" alloy, as it is not made by mixing the metals together in the desired proportions, but is obtained directly by smelting the nickel-copper sulphides of Sudbury, Canada. The two metals occur in the ore in just the right proportion to give this important property, with no subsequent additions or separations necessary. It resists corrosion very well, is harder and stronger (and cheaper) than pure nickel, and takes a high polish. It is especially popular for hotel, hospital, and restaurant equipment.

Many other copper-nickel alloys containing smaller amounts of nickel and copper and interesting properties are used. "Concast," with 60 per cent copper and 40 per cent nickel, is used as one of the elements in thermocouples of low resistance to the action of acids than nickel itself. Monel metal is one of these; other commercial nickel-copper alloys are Nichrome, containing 60 per cent nickel, 12 per cent chromium, 26 per cent iron, and 2 per cent manganese, and which were originally used for their high resistance to the flow of electricity, and are used in large quantities as wire or ribbon for the heating elements of such household appliances as electric ranges, toasters, and fans. One of the best known of these is "Nichrome," consisting of 90 per cent nickel, 8 per cent chromium, and 2 per cent iron. It does not oxidize rapidly at high temperatures, so lasts a long time, although it has been found that the higher the chromium content, the longer is the life of the element. "Manganin" is another highly resistant alloy of copper and nickel, with about 10 per cent manganese (from which it obviously gets its name). Its resistance does not change with changes in temperature, so it is valuable in making electrical measuring apparatus of extreme accuracy.

Heat Resistant Alloys. Some alloys which were originally used for their electrical resistance and their ability to withstand high temperatures are now used for the latter reason alone. Nichrome is an example, this alloy now being employed extensively in carburizing boxes and other chemical apparatus.

Acid Resisting Alloys. A number of nickel alloys display an even greater resistance to the action of acids than does nickel itself. Monel metal is one of these; other commercial nickel containing 44 per cent copper and chromium, and are used for dipping baskets, acid pumps, and filter presses. Tungsten-nickel alloys resist sulphuric acid, and "Ilum" resists even nitric acid. The composition of ilum looks like one of those recipes which end up by saying: "add yeast and allow to stand 21 days." It contains 31.6 per cent nickel, 21.07 chromium, 6.42 copper, 4.67 molybdenum, 2.13 tungsten, 1.09 aluminum, 1.04 silicon, 0.98 manganese, and 0.76 iron. The names of all these patented nickel alloys would fill a small dictionary.

Nickel has other commercial uses besides those of the manufacture of alloys. In the pure form it is a very soft, non-corrosive, other metals are frequently protected by nickel plating. The principle of nickel plating is extremely simple. The article to be plated is cleaned thoroughly, and then made the cathode of an electrolytic cell, the electrolyte of which is a solution of nickel sulphate plus a little nickel chloride. The anode consists of a plate of pure nickel. The process is similar to that of electrolytic copper refining.

Other important uses of nickel are as a catalyst in the hydrogenation of oils (uniting with hydrogen to form a solid fat), in radio amplifiers, and in the Edison storage battery.

"The Gossipy Sex"
The A. S. S. M. to Give Three-Act Comedy Tonight

Charlie Twitchell told me to tell you to tell your friend to tell his girl not to miss seeing "The Gossipy Sex," which will be presented under the auspices of the Associated Students of the School of Mines at the high school auditorium, Thursday evening at 8 o'clock, March 13.

Doris Torongo
This is a three-act comedy, something new and snappy, which has never been presented before a Butte audience. There will be specialty numbers between the acts, including a vocal solo by Frank Fall, accompanied by Earl Lindlief; a vocal solo by Beasie Wallace, also accompanied by Earl Lindlief; and a dancing number by Helen Spencer.

Doris Torongo takes the part of the long-suffering wife of John Bowen, who is in debt to the Norrises. The part of John is taken by Donald Shythe. Helen Karsted is the lady who says what she thinks on every occasion, much to the discomfort of her hosts. Gailen Vanell is the submissive husband. Billy Sullivan and Leah Torrey are two guests who are made miserable by Danny's tales.

CAST "THE GOSSIPY SEX"

Floyd Horton, Donald Shythe, Billie Sullivan, Pat O'Leary, Gailen Vanell, Roger Pierce, Mrs. Converse (directress), Freda Ehrlich, Pauline McCarthy, Roy MacFarland, Helen Karsted and Doris Torongo. James McCourt, another member of the cast, was not present when this photo was taken.

Joe Berryman Leads Miners to Victory
Over Capitol City Basketball Clubs Here.

ORE Diggers Win from Saints, Intermountain
Joe Berryman Leads Miners to Victory
Over Capitol City Basketball Clubs Here.

ORE Diggers Win from Saints, Intermountain
Joe Berryman Leads Miners to Victory
Over Capitol City Basketball
Clubs Here.

Montana Mines (36)
McCourt, f 0 0 1 0
Erickson, f 0 0 1 0
C. Trueworthy, f 0 0 1 0
Berryman, c, f 3 0 1 6
Ryan, g 0 0 1 0
Matlock, g 0 0 1 0
Utt, g 1 0 2 2
Little, g 0 0 1 0
Totals 15 6 6 36

St. Charles (23)
Roulleir, f 1 0 1 2
Egan, f 1 0 1 2
Clairmont, c 2 1 1 5
Gross, g 4 0 1 8
Sullivan, g 0 1 1 3
Totals 10 3 8 23
Referee: Dahlberg (Montana).

Pauline: "Don't you love an evening like this?"
Paul: "You bet, but I generally wait until we get a little further out in the country."

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ARE WE GOOD CITIZENS?

Do we love our own people, or our own town as we should? Are we careless of our best interests?

Do those whom we know best become commonplace because of long association? Do we say "hello" to the dog, and grunt a stingy greeting to our loved ones?

Do we have no pride in, or loyalty to, our own town? It is a good town, or a bad one, as we build it. It has been said of Butte that it "looks like hell when one comes back from any place except Anaconda." That saying is large, true only because we ourselves, are stingy and careless. We have a good town set like a sparkling jewel in the hills, that sheds charity and romance and wealth, as no other place ever did; and yet it is a neglected town.

If all of the money that is earned in Butte was spent here, Butte would rival the best cities in the world, but, unfortunately, our largest enterprise is the post office, where money orders are made out.

Many of us are careless in our spending, and after our good merchants have extended unbelievable credits, we take the first cash money we get, and slip it to a mail order house. And a nice, clean citizen business man has had to meet extremely reasonable appeals for contributions in return for the business they have got for the city. We are glad Butte merchants get this amount. We hope our student body and faculty increase in number so Butte merchants can get much more.

THE MONTANA DOLLAR THAT YOU NEED NOT KISS GOOD-BYE

Consider the rounds of a dollar when spent at home. The farmer receives it in exchange for produce he ships to the city markets. He pays it to the grocer. The grocer’s wife has a new gown, and it goes to the dry goods man. That gentleman pays it to his clerk, and the latter hands it over to the shoe dealer. The shoe dealer wants a new suit, and the clothing man gets it. A car goes on the blink, and the clothier transfers it to the garage man. The garage man is a pious sort of a fellow and drops it in the donation box at Sunday morning services. Then it reaches the church treasurer and he tickles the palm of the preacher with it, and the ministerial gentleman slips it to the milliner in exchange for a hat for Mrs. Preacher—or as part payment therefor.

Mrs. Milliner needs some face cream, and the beauty parlor or the drug store gets it. Then it goes to another grocer for foodstuffs, and the grocer hands it over to the farmer for produce. The farmer buys everything at home, and often his monthly account with his clothier or grocer is more than their printing costs them in a year. Sometimes he gets a chance at the dollars and the dollar starts off on another round of calls.

A sort of endless chain, you know. But, if the farmer had sent his dollars to the state, where in the world would it be now, and what chance would the farmer, or the garage guy, or the milliner have at it again?

You tell ’em.

"Five gallons, please."

"Okay. How’s your oil?"

"Just gas, please."

"About a bottle of Shinylola—great for lacquer; your bus is all covered with traffic film."

"Nope, just the gas."

"Your left rear tire’s pretty well shot. Better let me put a new one on; we’re selling puncture-proofs today for—"

"No, the gas will be all."

"How long since you had a grease job? Everything looks kinda dry—hear that body squeak?"

" Haven’t time today—just the gas this time."

"How about one of our electric cigar lighters—clamp right on your dash and when you want it—"

"Hell, NO! JUST THE GAS!"

And the ignant motorist drove away with his five gallons of gas, the filling-station proprietor remarked to a bystander:

"That there was my barber."

YOU CAN TELL A GOOD CHEMIST BY THAT

(Air, "I Learned About Women from Her").

I’ve roamed and I’ve ranged o’er this country
And most of the foreign ones, too,
I’ve seen many things’most the heathen
And some day I’ll tell you them.
But the strangest of all God’s creations
For which he is not to be blamed,
Is the queer looking guy, with the gleam in his eye,
The chemist is who he is named.

His hair is generally rumpled,
His hands are stained yellow and red.
He’s given a rosy appearance
By goggles attached to his head.
He covers his clothes with a duster,
He may or may not wear a hat,
But his trousers, one sees, always bad at the knees.
You can tell a good chemist by that.

His salary is not of the largest,
Twill barely suffice for his need,
’Tis a mystery to most everybody
How he can manage to feed.
If someone should tell you a story
Of a bank rolling exceedingly flat,
And ask for a touch, to buy lunch and such,
You can tell a good chemist by that.

—Industrial and Engineering Chemistry.
Montana Fossils Subject of Talk by Dr. Siegfriedt

Bear Creek Man Who Has Attracted Attention of Scientific World Lectures.

"Prehistoric Life of Montana," was the subject of an address at the Montana School of Mines by Dr. J. C. F. Siegfriedt of Bear Creek, whose fossil discoveries in the coal seams of Montana have attracted the attention of the scientific world and brought geologists to Montana to study the various finds. A large audience greeted the speaker.

The prehistoric animals that roamed Montana's plains when the world was young were described at the regular technical lecture which is a feature each week at the school.

Dr. Siegfriedt, a medical doctor by profession, became interested in the ancient fossil life of the area through the discovery of mammal beds of shale which accompanied a coal seam near Bear Creek. He began collecting the bones and teeth, and now his collections are the most complete of that ancient vertebrate life of that area. Dr. Siegfriedt had much of his collection at the school for exhibition.

Very Different.

Dr. Siegfriedt, whose original discovery was made near Butte, Montana, said Dr. Siegfriedt, was very different during the preceding geological period from what it is now. The climate in those ancient times was not the same, and there was more rainfall. Extensive swamps stretched for many miles over low bottom lands, and rapidly growing vegetation resulted in thick beds of peat. As time passes these peat beds became covered with sediment, and we now see them as beds of coal such as are mined near Bear Creek and elsewhere.

Through the forests and in the swamps were many animals entirely different from those now inhabiting Montana. After their death the skeletons of many of these animals became buried in the muds in or near the coal swamps and were preserved in such perfection that the most delicate markings can be studied with Exactness.

The horse and the camel originated in America. Fifty million years ago the bronotherium or "thunder horse," of Indian legends, frolicked among the ferns along the banks of prehistoric lakes and ponds of this state as did a number of other animals.

Dr. Siegfriedt, whose original discovery, a tooth which he declared to be a primate, was at first pooh-poohed by the professional scientists, has since scored a substantial victory. The learned investigators of the American Museum of Natural History and of the Carnegie Institute who spent several months at Bear Creek studying the strata of the Eagle coal mine now concede a new insect, a new primate and a new fish to the district—and have named one of the finds, Leptosomistes siegfriedti, in honor of the doctor.

Has Many Finds.

Ganoid scales, a covering of prehistoric fish and composed of the same material as the enamel of the human tooth, a tooth that must have belonged to a parrot-like creature which has apparently left no descendants, the teeth of a horse that could not have been more than 11 inches tall, a huge heavier tooth, a mite outlined in a bit of stone—and numerous other specimens of discoveries at Bear Creek were shown to a deeply interested gathering.

The ancestry of the camel, the alpacca and the llama, lived in America. Dr. Siegfriedt contends. They passed before approaching cold weather down to South America over the Isthmus of Panama and into Europe, Asia and Africa by way of land bridges. The prehistoric horse also first saw the light in America. The horse family and the rhinoceroses also—passed into Europe by way of Iceland ever a land bridge that connected the two continents, he asserts.

The fossils of camels have been found in various localities in the United States as well as those of the other two animals. The skull of the American rhinoceroses was found in Iowa. The "imperial elephant" has been found in the asphalt beds of Southern California, as have those of various other animals, but nowhere has there been discovered such a wealth of hitherto unknown forms as at Bear Creek.

Dr. George Gaylord Simpson of the American Museum of Natural History in a bulletin regarding the new find, says that a "new mamalian fauna in the paleocene" has been found at Bear Creek. "It is equivalent to the Torrejon of New Mexico," but the Bear Creek find "is of quite distinct facies and rich in forms not known Torrejon."

Dr. Siegfriedt's first find, which was discovered November 5, 1927, is referred to as a second lower molar.

Stressed Survey.

The speaker stressed the need of a state geological survey, declaring that it would be of great value to the public as a whole. There is untold wealth in Montana waiting to be discovered and brought into use. The state survey, co-operating with the national survey, could accomplish a great deal for the benefit of the development of the state without incurring heavy expense, he avered.

Dr. Siegfriedt also spoke for the support of the museum at the School of Mines. He declared that the people of Butte who, many of them possess rare specimens of minerals, should accession them to the museum—with cards giving proper credit to be placed on such loans—so that all might enjoy them. He said that the Montana School of Mines, because of its own importance and that of the district in which it is located, should have the finest museum of its kind in the world.
RADIO DEBATE PROBABLE

Freshman Team Loses to Butte High

The first debate of the School of Mines season was held March 5, when the Mines freshmen tangled with the Butte high school team. The freshmen dropped a two to one decision in an hot contest which developed some good speaking and close argument from both sides. Floyd Horton, Rogers Pierce and Bruce Crawford were the Ore Diggers' representatives, while Betty Kelleher, Kenneth Rhude and Jack Harlan appeared for the scholastics. The judges were Mrs. George Martin, from the Butte Chamber of Commerce, and Earle N. Genzberger, local attorney. The question discussed was, 'Resolved: That the annual Pi Kappa Delta contests are in the same predicament. Before I tell you what these two all-important objects are, let me give you the key to the door of escape. Run to the end of the earth, build a hut over your head, and live. I said live, but I really meant die. But, cheer up, this is only the key to escape. I'll wager one of you would choose the drab life of a hermit instead of my afore-said dual worship.

April, the exact date depending upon when the college team leaves for the annual Pi Kappa Delta contest. Professor Scott, who is coaching the teams, says that there is a slight possibility of a trip to Billings to meet Eastern Montana Normal and Billings Polytechnic. Because the Mines has no Co-Ed team this year, here will be no argument with the Normal College at Dillon.

RAMBLING OF MADAME X
First of a Series of Educational Lectures

Is it true that you aspiring mining engineers worship only two things in life? Granted that this is true, do not become alarmed. All of your "sweet" brothers from one year up to ninety are in the same predicament. Before I tell you what these two all-important objects are, let me give you the key to the door of escape. Run to the end of the earth, build a hut over your head, and live. I said live, but I really meant die. But, cheer up, this is only the key to escape. I'll wager one of you would choose the drab life of a hermit instead of my afore-said dual worship.

Well, I guess by now you all wonder if I know what I'm talking about or if I'm just "plumb" crazy.

Your first object of "worship" is a "dollar bill." To be more exact, I should say a dollar bill raised to the nth degree. I believe there are no arguments to object number one: Check and double check.

Now for your second object of worship. Of course, perhaps you have already guessed. No! Why, a pretty girl, of course! Do I hear any objections? I think not.

Having told you "what" you worship, it really isn't my affair "how" you worship.

P. S. If you're interested in the "how," my name is Madame X, my address is Y. Z., and my cards are as easy to read as A. B. C.

HOLLANDER COMES TO MINES
First Sent Here by His Government for Post-Graduate Course

Representing the colonial government of The Netherlands, Holland, Mr. De Vries arrived in Butte last week to begin an extensive post-graduate course at the Montana School of Mines.

"Mining authorities of both England and Europe," Mr. De Vries said, "regard Montana's school for mining engineers as one of the best in the world, if not the best equipped from a practical as well as from a theoretical standpoint. Methods and theories advanced by Montana's school always receive the first consideration of Europe's metallurgists."

Mr. De Vries is chiefly concerned with the western method of ore flotation and will begin his official investigation with a close study of mineral associations in ore and the effect of the association of ore concentrations.

Mr. De Vries is a former student of Delft university and other leading institutions in Europe. Although the Mines already boasts of a wide cosmopolitan attendance Mr. De Vries is the first Hollander to be sent by his government to take advantage of the rare facilities offered.
FIRST AID AND MINE RESCUE

The students of the Montana School of Mines were very fortunate to receive First-Aid and Mine Rescue work from the Bureau of Mines Rescue Car No. 9. The government has 11 of these cars and each is an up-to-date pullman car equipped to meet any emergency which might arise either in coal or metal mines. The equipment consists of oxygen tanks, helmets, measuring devices, etc. Living quarters are provided for the foreman and his assistant on each car.

Car No. 9 has been located on the siding at Meaderville for the past two months just below the Tramway mine. This car has the Northwest territory which includes Montana, Idaho, Wyoming and part of Utah.

Mr. Con O'Donnell, foreman of the car, was captain of the Anselmo mine team which won the world's championship in first aid work at Pittsburgh in 1927.

During the first week in February, one hour each afternoon was devoted to instruction in first aid work. This instruction was given to the junior, sophomore and freshman classes, by Mr. O'Connell. The work consisted chiefly in the emergency treatment to injured persons and methods for caring for persons suffering from electric shocks and other accidents. Each student in the course was required to make the bandages for the different cuts about the body, place tourniquets at the different pressure points and splint broken bones. Two different methods of artificial respiration were taught, the Schaefer and the Sylvester methods. Of the two methods the Schaefer was considered the best and instructions were given in this method.

At the end of the course 60 students were given certificates by the Bureau of Mines for the completion of this course.

Following this, during the afternoons of the third week in February, the junior class was instructed in mine rescue work at the Tramway rescue station. The first afternoon was spent in studying the different types of oxygen helmets used. The Paul, McCar, Gibbs and Fhess-Profo were the four principal ones studied and especially the Paul machine as this is the type of machine used in the mines of Butte and is the most common one in the United States mines. The different parts of the machine as well as tracing out of the circulation was done by each student.

Later in the week, the Paul machine was worn in the gas-filled chamber by each member, for the total time of 50 minutes. No ill effects were felt by anyone and a great amount of confidence was instilled in each one wearing a helmet. The final instructions consisted in the process of bulkheading and carrying men out of gas-filled stopes. Sixteen men were given certificates by the Bureau of Mines for the mine rescue work.

After completion of the work at the rescue station the 16 men were taken down to the car and were given a lecture on various apparatus not encountered in this camp. The work was as a whole very enjoyable as well as educational.

Margie: "About 12 o'clock the party waxed merry."

Sade: "Poor Mairy."

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COPPER METS GO TO ANACONDA SMELTER

Prof. Gilbert announces that the class in metallurgy of copper, by a special arrangement with Mr. E. A. Barnard, superintendent of reverberatory furnaces at Anaconda, will "log" the furnaces in operation for a 48-hour period beginning at 3 p.m. March 12 and ending at 3 p.m. March 14. The class will be divided into three 8-hour shifts as follows:

Wednesday, March 12—3 p.m. to 11 p.m., Wilson, Harrington, Williams, Henry; 11 p.m. to 7 a.m., Englehardt, Johns, Majors, Blitz.

Thursday, March 13—7 a.m. to 3 p.m., Little, Vandel, McCourt, Sheythe, Matlock; 3 p.m. to 11 p.m., Wilson, Harrington, Williams, Henry; 11 p.m. to 7 a.m., Englehardt, Johns, Majors, Blitz.

Friday, March 14—7 a.m. to 3 p.m., Little, Vandel, McCourt, Sheythe, Matlock.

The work will cover the charging of the furnaces, observation of the smelting operation, chemical analysis of the products of combustion, taking temperatures by pyrometers, etc. The students will make a tabulation of materials fed to the furnaces as well as the matte and slag produced. All of the data collected will be incorporated into a special report which will touch on phases of metallurgy not usually available in technical literature.

The students will recall that Mr. Bernard, on November 5, 1929, lectured on "The Cottrell Process." This was one of the series of technical lectures given at the school by practicing engineers of note in their respective fields.

It was at his suggestion that the "log" is taken at this time and is another example of the cooperation in instruction given by the industrial organizations of Montana to the "Mines" students.