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Through our Capability Exchange we are in a position to furnish a complete history and recommend to you Consulting, Examining, Sales, or general engineers in the fields of Metal Mining, Coal Mining, Geology, Metallurgy, Oil Production, or Oil Refining.

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Name of person in charge of employment:
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Nature of Business:
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WE WANT A MAN TO FILL FOLLOWING POSITION:
Title of Position:
Duties:

Want man of following qualifications:

Salary:
Opportunity for advancement:

Men will be stationed at:
Town
State

Will you pay traveling expenses to place of employment?

Accommodations and cost of living—Single man:

Accommodations and cost of living—Married man:

Colorado School of Mines Alumni Association
C. Lorimer Colburn, Secretary, 509-17th St., Denver, Colo.
COLORADO

The HIGHEST State of Enjoyment
Invites You to Learn
What the JOY OF LIVING Really Is

This page features an article about the joy of living in Colorado, emphasizing the state's natural beauty and the high-altitude growing conditions that make Colorado fruits and vegetables so delicious. It also mentions the state's altitude being the key to the joy of life, with cool summers meaning less expense for living here compared to other places.

The article concludes with a call to action, encouraging readers to see Colorado on their next vacation and begin to know it. It highlights that Colorado can be found through every form of display of colors—its dazzling metals and minerals; 250 minerals and compounds have been found.

Moreover, the article confirms the importance of altitude in Colorado, from 3,400 feet in the lower Arkansas Valley to the 14,400 feet of Mt. Elbert, Mt. Massive and other peaks of the upper Arkansas Valley. It concludes by stating that when you know and understand Colorado, you'll probably want to live here, and that's very easy, too. Overnight displays of the most enthralling scenery, unlimited facilities for every form of outdoor recreation—its charm of a permanent home in a land of real business and professional opportunity.

When you know and understand Colorado, you'll probably want to live here, and you'll find it's a matter that can be easily arranged. Meanwhile, however, you'll want to see it—and begin to know it. And that's very easy, too.

For more information, the article invites readers to the Colorado Association for a display of the most enthralling scenery and unlimited facilities for every form of outdoor recreation—its charm of a permanent home in a land of real business and professional opportunity.
The Engineering Course

A YOUNG man, graduated from the Colorado School of Mines in 1928, recently ranked third in a general survey examination at the Tucker School of Business Administration, Dartmouth. This young man was granted the degree of master of business administration this spring. If this has any special significance, it seems to be that the four years' engineering course at the Colorado School has a more general application than is commonly believed.

It is usually held that a specialized training, such as given in engineering, has no significance other than the imparting of practical knowledge, the application of which is definitely limited to a given field of activity. This belief has been contradicted many times. In pointing to this specific case—the case of one of our very recent graduates—we are not giving all the evidence. There is no hasty generalization here. A long list of prominent names could be compiled—men whose engineering training has proved valuable in other fields. An engineering course is intended primarily to train men for the engineering profession, but there are some general cultural values, after all, in such a course.

A Strong Department

STUDENTS from Georgia Tech, West Virginia University, Penn State, Louisiana University and other colleges are registered in the Colorado School of Mines summer courses for graduate work in geology. The Mines department of geology is recognized throughout the country as giving one of the most thorough and practical courses in mining and petroleum geology.

On the faculty in this department, the School of Mines has men whose actual experience in the field strengthens the department. Geophysics, which supplements the geology department, the geology training offered at Mines is not equalled anywhere else in this country. A geophysicist, you know, has been defined as a "real good geologist."

Chronical Knocking

IF your motor car commences to knock, you know that something is radically wrong with the engine, and if you are wise, you have it overhauled as soon as possible, either doing the job yourself or hiring it done by a competent mechanic. But if you commence chronic knocking yourself, (by which I mean habitual, carping criticism), who is there to overhaul you? You must do the job yourself, or take chances of becoming a general nuisance, and perhaps ruining your own career and success in life.

I do not know whether it was a Rotarian or a Kiwanian who first coined the expression: "Throw away your hammer and use a saw." Quit knocking and saw wood. Be a Booster. Although I agree with the sentiment he was trying to express, it seems to me that there are two sides to this question. For example, if you hire a carpenter to build a frame house, and he reports on the job with a saw but no hammer in his tool kit, will he not be able to do as much of a job as he gets a hammer or uses something else in place of one. Although it is a well-known fact that "you cannot saw wood with a hammer", it is equally true that "you cannot drive nails with a saw". Both a hammer and a saw are necessary tools in a builder's kit, if used for their own proper purposes. A little of the right kind of knocking is sometimes helpful, but it must be constructive knocking.

—R. F. Pierson, Jr.

Market Worth Cultivating

RECENTLY The American Mining Congress, through its Bureau of Mining Economics, made an investigation concerning the purchasing power of the mines. The result was most informative and favorable to the industry. For instance, taking the important units into which it is geologically divided, a large coal company, representative in production of at least 50 of the great producers, spent more than $200,000 for underground equipment. Multiply this sum by 50 and the result is quite a sizable market, isn't it? It is common knowledge that on very large mines, more than 500,000,000 tons of coal is produced by less than 2,000 employees. This is how it is being done: The president of the college and the alumni secretary are working together, and both are devoting their time in carrying out a well organized drive. Several formal dinners and luncheons have been given.

These affairs were attended by a number of influential and wealthy men who are interested in promoting education. The endowment plan, the college aims and the purposes for which the money is to be employed are all carefully explained on these occasions.

A new edition of this plan has been produced. The Rollins Alumni Association has adopted the College's plan. The purpose of the Rollins Alumni Association is to establish a fund for the benefit of the Rollins College. The Rollins Alumni have adopted the plan and this committee or its staff representatives will explain the plan to men and women who might become interested in helping the endowment fund.

The Magazine has carried, in practically every issue since the Plan's conception in 1928, a page editorial reviewing the details of the Plan, and the machinery for the handling of gifts, bequests and the like has all been provided. The publicity campaign is now being carried into its third year, but there is one feature of this effort to popularize—the Plan which should be emphasized more.

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WHY NOT MINES?

If Rollins college, with an enrollment no larger than the School of Mines, and with an alumni list no longer than the School of Mines, is able to raise a sum of money in so short a time, why not Mines? No college has shown more enthusiasm than our own bunch of Miners! The Mines Alumni Association has put its Foundation Plan across as easily and with as much success as the Rollins alumni are doing when the time comes.

The Magazine has carried, in practically every issue since the Plan's conception in 1928, a page editorial reviewing the details of the Plan. Printed matter, broadcasting the School of Mines Foundation, has appeared often in various publications, but what is needed most at this time is a by-the-week-of-month campaign on the part of Alumni. It must not be inferred that information has not been given out in this manner. It has, but there should be more talking than ever before. We may take a hint from resolution (a) adopted by the Rollins alumni referred to above: "To utilize all appropriate opportunities of describing the Plan to men and women who might become interested in helping the endowment fund."
High pressure salameterism is not necessary—it is not desirable. What is pertinent to the final success of the Foundation, however, is an understanding of what the Colorado School of Mines Alumni are trying to do in the way of raising funds for the alma mater. Influential men, who hold high positions in the mineral industries in particular, should be informed. It is up to Mines men to give out this information, and when the time arrives for conducting an organized campaign, many friends of the School will be approached specifically because of this preliminary talking which the Alumni will have done.

Various alumni groups have established what is called the "Alumni Fund." This is different from an "Endowment Fund" in that it is administered by the alumni association and not by the college or some other alumni board. These alumni funds are built up by donations from graduates, and in most cases by voluntary donations. The money accumulated in this manner is employed by the association, for the particular purpose specified by the donors.

The Colorado School of Mines Alumni is sponsoring a "Gymnasium Fund." During its first year this fund has grown to $24,812. About 360 alumni have made individual subscriptions, each of whom contributed $66. From the total amount subscribed for the new gymnasion so far, the engineering graduates have donated $15,016. Other amounts contributed by various alumni groups, classes, and so forth.

The individual donations of the 360, who were not counted in the various groups, is significant. There are always a number of loyal members in any organization who give help, both financial and otherwise, without having to be stimulated to action by a group rally. Here is a thought, left at the very end of this essay, to be pondered over: What individual in the Colorado School of Mines Alumni Association is interested enough and able financially to donate enough to start a new gymnasion this year? What two individuals, or possibly three, are willing to get together on such a project and donate $100,000 for a building at Mines?

In making the announcement, the chairman of the Alumni Fund Committee reported, that after it had conducted a survey of the needs of the University and its several schools and colleges, decision was reached to assist the Alumni Gymnasium Fund, which seemed most worth of help at this time. Accordingly, ten schools, colleges, and funds in the University received various amounts of the total sum, of which the largest contribution, $15,016, went to the fund for faculty pensions. Started in 1928, the Alumni Gymnasium Fund has received from alumni approximately $80,000. This money has been obtained solely on a voluntary basis. The limited amount has been requested and alumni have felt free to give it away as they will.

Lester J. Hartzell will return to the Montana State School of Mines, after last year's leave of absence which was spent in study at Oberlin college, Ohio. Since his graduation from the Colorado School of Mines in 1895, Dr. Hartzell has been connected with the Montana institution. At the instruction of the chemistry department, he is now the head of the chemistry department there.

Alumnus Takes Up Old Duties

Strangely, to say, the one new building proposed is a gymnasium. Yet, it is not strange when explained, for the interior of this gymnasium would be remodeled into laboratories and class rooms. It is centrally located, near to Guggenheim hall, and therefore an ideal building for instructional purposes. As a gym, this building is not only out of place, but is sadly out of date. The basketball court is too small for indoor games, but it could be converted into a splendid museum to house all the valuable specimens now scattered among the various mines and geology classes.

The central gymnasium is needed for the use of the physics, geology and earth science major student. By converting the gymnasium into a museum, the students will have the opportunity to view the actual specimens in their studies.

The new gymnasium—Here is a definite project for consideration. It is an ideal building for the Colorado School of Mines. The Alumni will have done.

One new building would be on a lot just one and a half blocks from Brooks Field. It would be a welcomed addition for the Colorado School of Mines.

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Anomalies of Vertical Intensity

Anomalies of Vertical Intensity

Correlation of the Anomalies of Vertical Intensity with the Regional Geologic of North America

In order to remove as far as possible local magnetic effects which did not reveal local structure but simply clouded the regional anomalies, a 250 gamma isometric interval was used. A 100 gamma interval was found to show too many meaningless local anomalies, while a 500 gamma interval left too much regional information.

Acknowledgments

The writer acknowledges with pleasure his indebtedness to the United States Coast and Geodetic Survey, the Topographic Survey, the Geological Institute of Washington, and the Observatorio Astronomico Nacional de Tucuman.

This thesis was presented to the President, Board of Trustees and Faculty of the Colorado School of Mines by George B. Somers as a partial fulfillment of the requirements for the degree of Doctor of Science.

This thesis will be published in this Magazine in five consecutive installments.
for August, Ipso

meant that a structural high coincides with a magnetic structure” is issued—By “positive coincidence” is meant these conditions where a magnetic “high” coincides with a structural high. Conversely “negative coincidence” has meant that a structural high coincides with a magnetic “low” or vice versa.

Chapter I—method of procedure

In order to show the relationship between the anomalies of vertical intensity and the regional geology to advantage, the best method seemed to be superimpose the isonomalics onto a geologic map of North America. The best geologic map available for this purpose was the one accompanying Professional Paper No. 71 of the United States Geological Survey, but after due consideration it was decided that a tinted tracing of this map on tracing cloth would be more suitable for the following reasons: (1) The map was out of print and copies were hard to obtain. (2) Tracing cloth would be more durable, and corrections or alterations could be more readily made. (3) The colors on the map were too deep to show the isonomalics to the best advantage. (4) Unnecessary material could be eliminated in tracing.

After this tracing was made it was found that the isonomalics still did not show to best advantage on account of the colors. Furthermore, prints could not be made from it. Consequently plain outline maps showing only the countries, states and isonomalics were made on tracing paper. From these diagrams were made so that each copy of the thesis could be provided with maps. The original colored tracing was then presented to the Geophysic Department of the Colorado School of Mines for reference work.

PREPARATION OF MAGNETIC DATA

General In order to locate magnetic stations accurately without putting too many lines on the tracing, a supplementary sheet was made on which the meridians and parallels of latitude were drawn for each degree. Means of this supplementary sheet the stations could be easily and accurately transferred to the tracing from data sheets and maps.

On account of the fact that the magnetic intensity at any point changes from year to year, it was necessary to choose some year as a base and then obtain the vertical intensity of each station for that year in order to make the results conformable. 1925 was chosen as being the most recent year for which the greatest amount of data was readily available. The values for 1915, 1920, 1924 and 1926 were recalculated for 1925.

The United States—The magnetic data for the United States for the year 1925 was obtained from a photostat copy of a vertical intensity map prepared by the United States Coast and Geodetic Survey for that year. This map gave both the vertical intensity at each station and the calculated or approximate location of the isonomalics for each one thousand gamma or hundredths of a gauss. Each station was given a number for convenience in making calculations and plotting results. Several different systems were used as new ideas occurred and were tried out during the numbering process, but on the whole the numbers would be found to occur in groups. In a narrow strip which ran across Kentucky, Southern Ohio, West Virginia, Pennsylvania and New Jersey, the stations were so close together that a four figured number could not be given conveniently to each one. In order to overcome this difficulty the area was divided into five sections which were labeled A, B, C, D, and E. As each section contained less than one hundred stations, each station could be given a two figured number.

In several instances stations were overlooked during the numbering process and these were later given the number of a nearby station together with a letter as 367A or 367B for example. They were thus easier to locate when the calculations were made and plotted that they would have been had they been given a consecutive number which differed by several hundred from those of surrounding stations.

Inasmuch as the vertical intensity increases from zero at the magnetic equator to a maximum at the north magnetic pole it was necessary to make a correction for this planetary variation in order to bring all stations to a common or normal basis before anomalies could be determined. In a previous article of a similar nature the writer used a base station and compared all other stations to this base. The average change in gamma per mile in north-south and east-west directions was computed. This result was multiplied by the distance north or south and east or west of the station to be corrected, from the base station. The algebraic sum of these two corrections added algebraically to the value of the station gave the corrected value for that station. The method worked in a fairly satisfactory manner for one state, but it had several drawbacks for a larger area.

First, it gave only the average change per mile while the actual change may have varied considerably from the average. Second, the error introduced by using the average change would have been too great over an area so large as the United States, especially as the average changes at every point from east to west and north to south. Third, it was both cumbersome and liable to error. Fourth, the corrections at the extreme points of the country would have been so large that the anomalies be comparison would have been too small to be effective. Other methods of eliminating the planetary or regional effect have been used by Nippoldt and others, but the one used here was decided upon as being more suitable for this work.

In order to overcome the difficulty, an entirely different scheme was used. First, the normal value vertical intensity was determined for each station by interpolating between the isomagnetic lines on the United States Coast and Geodetic Survey map. These lines on the map have been smoothed out to such an extent as to leave an appearance of continental anomalies but to eliminate regional and local ones. The value thus obtained was considered to be the true value of the station. The difference between this calculated value and the value given on the map (columns 2 in data sheets) was taken as the anomaly at that station. This anomaly was considered as positive when the given value was greater than the true or calculated value, and negative when the given value was smaller.

After all the stations had been calculated and plotted, the isonomalics, linear, or contour lines connecting points of equal anomalies, were drawn at 250 gamma intervals. This interval was chosen to remove any errors due to the possibility of local anomalies at stations and thus to give more truly the regional effect. It was considered that an isonomic interval of 100 gamma was entirely too small, but the...
possibility is also admitted that a 0.5 gamma interval might have been better than the one used.

On the main base map or tracing the zero isometric was colored green, the positive ones blue, and the negative ones by light dash lines. Areas whose magnetic anomaly was due to a group of stations having a line of short time drawn inside of, touching, and perpendicular to the inner isometric line due correction marks.

Canada—The magnetic data for this country was obtained from two separate sources, the Topographic Survey of Canada entitled "Alaska Magnetic Tables and Charts for 1920." The former furnishes approximately 400 stations with the vertical intensity from 1915 to 1925 for all parts of Canada included in the United States Coast and Geodetic Survey's data sheets. The latter had 500 additional stations with the horizontal intensity "H" and the inclination "I" given for 1925, while the latter had 500 stations another scheme to be worked out to obtain the isomagnetic lines. From maps accompanying the bulletin, which show the H and I lines for Alaska, the values of H and I were obtained for a number of points over all the territory. In the same manner as those of the United States already described.

When the stations in Alaska were plotted they found naturally into six groups.

1. Southeastern Alaska
2. The Coast South
3. The Aleutian Islands
4. The Yukon river from the coast to the Canadian boundary
5. Canada along the Alaska boundary

The areas covered by these stations were so narrow, and the country in between so vast, that only an exceedingly rough correlation could be obtained, and this being so, the position and negative anomalies were then obtained in the same manner as those of the United States already described.

On the battle front, a technique of measurement had to be developed which given the approximate idea of the terrain, the distances to hills, rocks, and forests—a general correlation of topography with rather wide stretches of land is much other details. On the method of doing this proved worthy of development. One was the focus of this survey, and the other was photography. The vertical intensity anomalies to be out of the question.

The topographic survey was carried out by direction and elevation of the various forms of telescopes, or optical instruments, obtained the results by measuring the angle of inclination from the object, and the distance of the object. The G.C.S. and other methods of doing this proved worthy of development. One was the focus of this survey, and the other was photography.

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Central and Peripheral Surveying

Two advantageous ways of picture surveying are:

1. The negative has the image upside down, while on the print it is right side up.
2. The negative does not show the object, as a house.
3. Its length, while not measured by us, can be closely estimated. For example, in some localities trees of one-story frame buildings are rather uniform in any given locality, etc. A little experience will enable anyone to interpolate between known points to a fair degree of accuracy.

Heights of objects are better to measure from, than other dimensions, because it is not always easy to tell at what angle the other dimensions are presented to us, but upright objects are so nearly vertical as to introduce little error, on the whole.

MEASURE FROM THE PRINTS

In measuring from the picture it is better to use prints, rather than the negative, for several reasons:

1. The negative has the image upside down, while on the print it is right side up.
2. The negative does not show the object, as a house, for example, and go around it at such distances as are advantageous, using handsomuous or angle from sun with time of day, for angles from meridian.
3. The image is known can be included in the picture, and the vertical dimension can be closely estimated. For example, in some localities trees of one-story frame buildings are rather uniform in any given locality, etc. A little experience will enable anyone to interpolate between known points to a fair degree of accuracy.

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Air Repressing Greatly Increases Production of Oil

in Williams pool, Texas

Methods of represuring that favor the maintenance of a low gas-oil ratio (approximately 1,000 cubic feet or less per barrel of oil) are desirable and aid in conserving the reserves. All air is pumped by represuring by bypassing.

The use of air for represuring or the circulation of an air-gas mixture of high air content aggravates corrosive action. Brass and bronze working parts are now generally used in the pumping equipment in the pools of this district wherever possible.

Gas, while available, is probably a better represuring medium, because it is more soluble in oil and its corrosive action is less. The recycling of casing-head vapors with gas for make-up purposes has given satisfactory results on a number of properties in the district. The use of all vapors produced with the oil as a represuring measure and trends to prevent loss in the gravity of the oil.

During the early development of the shallow pools some wells were completed to produce from one or more sand lenses, and a considerable depth of open formation was left in the bottom of the hole. In other wells pockets were drilled below the pay. Although these methods of completing wells may not appear detrimental to production when a well is completed, later they can cause water hazam, especially under represuring operations. The best practice requires close isolation of the pay sand. If there is a barren formation or water zone between the producing sand, the hole should be plugged back to the bottom of the pay, or if a barren formation above the pay, the well should be properly cased before represuring is begun.

The sand conditions in several of the shallow pools under observation were as follows: Free gas occurred in the upper part of the zone and below this zone in sand or thickened, to obtain as high a ratio of solids to liquids as possible. The solution. Evidently, these pulps must first be settled, or thickened, to obtain a high ratio of solids to liquids as may be economically possible; then this thickened pulp must be recovered to recover the entrained solution. The treatment of this problem entails the theory and practice of settling and filtering, together with what little we know about adsorption.

General Principles

Taking up first the relatively simple case of ores which have been batched by leaching, it is seen that, since the solids remain stationary, the question of recovery of entrained solution values is largely one of displacing rich solution by water. For purposes of analogy, this process may be considered a partial replacement of oil from the ore particles, and driving it out of the solid mass. Actually, of course, this action cannot take place; the rich solution and the barren water diffuse into each other, and the best that can be hoped for in an eventual dilution of the barren solution. From the kinetic standpoint, this mechanism of this process may again be fairly accurately represented by a logistic function of time or of the number of batch washes applied. Thus, let a represent the value (of metal or metallic compound) absorbed in the solution. Where C is a constant for constant temperature. From this it also follows that the "displacement efficiency" at any time, or for a given number of successive washes, is expressed by the equation:

\[ E(t) = \frac{C_t}{C_0} \]

Thus the total weight of gold recovered was 22.80 grams. In the formula given above, then, we may substitute a = 75, A = 50, B = 22.8, and C = 0.25. Where x = 0.25, y = 0.25, z = 2.25. Also:

\[ \frac{W_{\text{eff}}}{W_{\text{eff}}} = \frac{22.8}{25} = 0.91 \]

Similarly we may calculate successive values of x for the remaining values of t. The following table shows the calculated values of x in comparison with those found experimentally, as listed above:

<table>
<thead>
<tr>
<th>Wash No.</th>
<th>Observed Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.56</td>
</tr>
<tr>
<td>2</td>
<td>0.41</td>
</tr>
<tr>
<td>3</td>
<td>0.35</td>
</tr>
<tr>
<td>4</td>
<td>0.30</td>
</tr>
<tr>
<td>5</td>
<td>0.22</td>
</tr>
<tr>
<td>6</td>
<td>0.15</td>
</tr>
<tr>
<td>7</td>
<td>0.07</td>
</tr>
<tr>
<td>Total</td>
<td>2.29</td>
</tr>
</tbody>
</table>

Values given in the table are calculated values of x in comparison with those found experimentally, as listed above:

- W; The weight of gold recovered (grams). 
- W_eff; The weight of gold recovered (grams).
- W_{\text{eff}}; The weight of gold recovered (grams).

The values in the table are calculated values of x in comparison with those found experimentally, as listed above:

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By contrast, when the entire 100 lbs. of wash water were filtered and the solution maintained at 19.8
grams of Au, or 79% of the absorbed value in the sand.
This brings out the advantage of stage washing. A relatively small amount of wash water, need not to state, there is a definite limit to the quantity of wash water that can be added in such a way as to maintain the concentration of the pulp, and hence, the final height to which the sludge will settle in a very long time. Finally, then, during the period of
impeded settling, the velocity of the fluid in the tank is

\[ V = \frac{dh}{dt} = k - h - h_i; \]

and from this it follows that, during all three periods, the time necessary to drop through two feed values of \( h_i \) is proportional to

So far, we have assumed no motion of the fluid medium. But in continuous settling the pulps must be introduced continually, the products (overfall and underflow) washed out continuously. Hence there must be a horizontal com-
ponent of motion of the liquid in the tank. The simplest
form of settling tank is simply a flat-bottomed cylinder, the feed coming in at the top center, and the overflow acting as masses, rather than as individuals,—very much
like voters at an election. As these various size-zones
will be found to arrange themselves in zones, the particles
will be found to form themselves in such a way that the
inhabitants of one zone will be quite distinct from those
of the others. The difference in their composition will
be such that they will separate themselves from one
another, and if any, difference whether we use a circular tank, or a
plane of symmetry, there are no such
interference particles of the solid, each particle acting as though it were entirely isolated in the
fluid. However, it is seen at once that such a condition
cannot be obtained in settling tanks, where many particles
of solid must be present in any given portion of liquid.
But most settling tanks are foully foully (five parts of liquid to one of solid), so that when the pulp first enters the tank, the settling action is not only very

...Waller, Lewis & McAdams, Principles of Chemical Engineering, p. 215-111, p. 134-135, N. Y.

To observe geophysical methods in northeastern Sweden, Lenin-
...would have considerable time to be spent on the
...An engineer is a poorly paid man
...and stays with the job till the end is in sight.
...Or anything else—depending on times.
...He draws his conclusions with unbiased mind
...Expecting some pay and a great deal of fame.
...Including the doctors and most legal men.
...Just as likely as not their thoughts are delusions.
...He gets his small check and hides all his pride
...But he'll work to beat hell to do what he can
...Thus the doctors and lawyers and a few other men
...in the summer at the Colorado School of Mines, re-
...Several eastern colleges as well as a number of schools
...found they could not keep the same thing of the engineer men.
...Should give bigger fees for the engineer men
...Thus the doctors and lawyers and a few other men
...Just as likely as not their thoughts are delusions.
...In August, 1929, Malkovsky will read two papers by Prof. C. A. Heiland.
...Malkovsky will read two papers by Prof. C. A. Heiland
...to the Geophysical Union in Stockholm, Sweden, in August.
Through Spain to North Africa and Spanish Morocco

By J. A. Riley, '23

SPANISH Morocco is usually entered from Spain, traversing the Mediterranean Sea from Algeciras (Gibraltar) to Ceuta or Tetuan, or from Malaga to Melilla. Lack of intercommunication within Morocco by means of good roads makes it necessary to plan one's trip so as to arrive as near to the ultimate destination as possible. Southern Spain is, however, very accessible from the United States. Three very fine Italian steamships call at Gibraltar en route to Italy, and it is also possible to go direct to Ceuta or Melilla by means of the American Export Line, a line principally concerned with freight but direct to Ceuta or Melilla by means of the American Export Line, a line principally concerned with freight but having accommodations for a limited number of passengers. This latter method eliminates a very unpleasant Mediterranean crossing on very small Spanish mail boats.

Our crossing on the "Roma" of the best known of the important trade cross-roads of the world; it is no wonder that pearling the world of biblical pictures. Built like a skiff in general shape, they are slightly broader of beam and usually earn' the world as if they had been transported from their forward leaning mast and single sail. These last manner, mixed with tramps, tankers, antiques of all sorts might see it. Otherwise the harbor was full of all manner personify action and indicate law and order to all who enter its gates. Built on the model of a Marquis of Spain, an officer of the company for which I was to work, inscribed on the box. So after a brief consultation, and relieving themselves of all culpability, at least to their notion, by saying 'What's in a name? had been answered, at least to my present satisfaction. And so we drove on out of this little 'village of entrance', over streets of rough cobble-stone and out on to the road around the head of the bay. Once out of town the road became good. Laboredly made by hand and a wheezing steam roller, it was thoroughly in-adequate to cope with high speed auto travel as we know it in the States, but good enough for our Spanish driver to negotiate at 90 kilometers an hour. Thoroughly weary, from labor holding on the curves and when passing other vehicles, we arrived at Algeciras still intact and thankful for it.

What a mirage had been our first view of this town from the harbor! Instead of the glistering whiteness we found filth and extreme poverty—the dazzle was all lost in a close-up distance and a semi-tropical sun can work wonders. Added to this was the typical smell of Spain; composed of many ill-smelling flowers, chief among which is burning corn in the States, but good enough for our Spanish driver to negotiate at 90 kilometers an hour. Thoroughly weary, from labor holding on the curves and when passing other vehicles, we arrived at Algeciras still intact and thankful for it.

Spanish Morocco

for August, 1930

The Arrived at Melilla. Right: The Majestic Head of Gibraltar Beyond the Harbor.

Left: A Street Scene in Malaga. Above: A Scene Along the Shores of the Mediterranean.
white that sail each day for Tangiers. The city is also
younger the more undress. What they wear usually starts
in progress. Dress of the Spanish is not striking. Except
sandal and both men and women use them. The children
the cafes and hotels of the capital.
forty minutes less than twenty-four hours before your
Algeciras was dropping in and
Mother—adding whenever possible to the pan of
Algeciras' one beautiful re-
we must have been absolute
exposition in one picture of what countless tourists' bureaus
the horizon. And off to the south the mountains of Africa
And from this beautiful spot one looks nearly due
The garden itself, except
Road Construction Work in Spain. Laboriously Made by Hand.
Note the Moorish Labor.
into a large arm chair. Usually
these forts along the sea are
in shape. We passed through
serves as a naval officers training ship. And beside it an
its present state resembles a
Principe del Foso. He seems to know of varying sizes and in various states of preservation. Some
the observer——adding whenever possible to the pan of
lands where oranges, lemons, olives, almonds, figs, pome-
grow; and the grapes, grown in nearly perpetual sunshine,

The C. S. M. Magazine
for August, 1939
29

The C. S. M. Magazine
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american, several English and Spanish, two German and
numerous other small craft.

Malaga boasts street cars, paved streets, two or three
trip and the boat is equipped with twenty or thirty
close to Spain. But before we leave Spain let me tell a story that,
while it loses much in translation, expresses much, to my
the parts of Spain which tourists are frequent and
founded in the sixteenth century by the Moors after
the parts Spanish were much more
the boat and we were ready at nine in the evening to set
impressive story as charming as it is charming.

The parts of Spain which tourists are frequent and
founded in the sixteenth century by the Moors after
along the sea are new and one of the most famous of all
around it were dancing most of the
the view, and at the outskirts of the city is the bathing
from Malaga to Seville, Madrid, and other northern points and
and its daily dozen in the form of a short walk at stipu-
other fruits, and olive oil to the ports of the world.

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What Others Are Doing

On June fourth, 1930, to become the first contributor to The Bucknell Alumni Fund, the Scholastic Alumni of 1920 voted unanimously to establish their Class Memorial in the form of an endowment scholarship for the benefit of the University's newest and greatest project.

The Bucknell Alumni Fund came officially into existence on June first, 1928, by action of the Alumni Council and the Board of Trustees. The handsome gift of 1930 days three years later brought The Fund into being.

MANNI Scholarships

On the basis of marks for the fall term, the Board of Trustees of Miami University has been able to award during the current year a total of twenty-three tuition scholarships. Seventeen of these were county or city scholarships; five were awarded to outstanding competitors in the open scholarship competition; and four were recognitions of distinctive achievements in the state-wide scholarship contests. Awards for next year have not yet been made.

PROCEDURE AT BATES

According to the new constitution of the Association the Alumni Council is the working body of the Alma Mater and more scattered General Association. The Executive Committee of the Council in turn is the group which functions between annual meetings of the Council and of the Association.

Beginning in September, 1929, regular quarterly meetings of the Council have been held in Portland and the last two in Boston. By vote of the Executive Committee a summary of its activities appears in this issue.

There has been a one hundred per cent attendance at all the meetings except the last, when one member was unavoidably kept away by pressure of business.

PRIZE SCHOLARSHIPS AT ROCHESTER

The Rochester Alumni Association, acting on behalf of the Alumni Council, and participation in the scholarship movement by the several schools in this district have been successful.

During the several years in which the Institution has been operating, it has long been a custom of the alumni association. The manufacture of new magnesium has come to be a matter of considerable substance in the west, and a competitive price basis with other metals.

MAGNESIUM IN 1929

The domestic output of new magnesium ingot increased from 115.3 tons in 1928 to 155.7 tons in 1929, an increase of 20.4 per cent, according to the United States Bureau of Mines, Department of Commerce. Magnesium has become a commercial material of considerable importance. Prizes reductions of 5 to 20 cents a pound, which became effective for shipments made from the first week in March to the first week in April, 1929.

PROCEDURE AT BATES

During the several years in which the Institution has been successful, the changes for several years it was found to work fairly well, and the method of getting the average daily production per well for the month prior to repressuring in the three pools was 1.2, 1.3, and 2.9, respectively.

Air Repressing Increases

especially where there are several operating units. Leaks in some of the pools have therefore been consolidated, a condition that permits greater freedom in choosing a plan of operation. The results of these repressuring operations, of which the writer reports experience, have given satisfactory results.

By-passing is controlled by regulating the input volume, holding constant the output pressure, careful timing of the intermittent pumping between the wells. The selection of input wells in the Williams and newer developments have also been made, is the pressure on the output wells, which may be affected by the water in the pool. The positions of the pools on the structure, the distance of the input well from the boundary line, the mechanical conditions of the pools, and the past production history of the wells. In these shallow pools the average ratio is 1 input well to 6 producing wells.

The average daily production per well for the month prior to repressuring in the three pools was 1.2, 1.3, and 2.9, respectively.

Anomalies of Vertical Intensity

By choosing a number of stations throughout the area at which several observations had been made over a period of five years, it was possible to determine the approximate intensity of the isomagnetic lines in the central area. This average change was none too satisfactory, but by checking the values for several years it was found to work fairly well. The agreement in form of the isomagnetic lines determined in several different years was found to be of extreme annual change, and with this map as a base, all the station intensities were changed to 1925 values. To do this there was first to make a map of annual change in Z noted for that area. This value was then added to the map of Z — H, and the correction applied to this value in order to get Z for 1925.

So few low stations were available, even including those near the border, it was found it would be difficult to draw the normal isomagnetic lines. It was decided therefore to use the horizontal intensity and inclination maps of the United States Hydrographic Office, as a basis for drawing these lines. To do this, H and I were obtained for a number of points which were then Z-calculated from these data. Using these values, the drawing of the isomagnetic lines by interpolation was a simple matter checked very closely with those found on the photostat map of the United States and Canada, used by the Coast and Geodetic Survey and along the west coast of Mexico and Central America. In Yucatan and western Central America, however, the isomagnetic lines were drawn by hand, and to run approximately a thousand gammas too high.

In this, the close check with the isomagnetic lines near the United States boundary was it to use these lines in Yucatan and Western Central America just as they were, but the isomagnetic lines in the western part of Mexico were found to be of extreme interest, and the same values in the eastern part were decreased to a certain extent, so as little or no correlation with the regional geology could be observed. These isomagnetic lines were then used to delineate the region of the isomagnetic lines, and the vertical intensity per year. This method of getting the average daily production per well for the month prior to repressuring in the three pools was 1.2, 1.3, and 2.9, respectively.
New Professors on Faculty

Constantinep will lose one of its leading American educa
tors when Prof. J. A. Fumier, present head of the depart
ment of technology, will accept an offer from Robert
College, join the faculty of the Colorado School of Mines.

Mr. and Mrs. Fumier and their small son are expected in
the city the latter part of August.

Prof. J. A. Fumier

Dr. Fumier, who was graduated from the State Col-
lege at Pullman and received his master’s degree at the
University of Minnesota, did further graduate work at
the University of California from which he received his doctor’s degree four years ago.

Since that time he has been associated with Robert
College in Constantinep.

Announcement had also been made of the appointment
of M. G. Pawley of Itasca, N. Y., as instructor in mathe-
matics. A graduate of Cornell, Class of 22, Mr. Pawley
was sent by Rochester Polytechnic Institute at Troy, N. Y.,
and did graduate work at Massachusetts Institute of Tech-
ology and Cornell. He received his master’s degree from
that institution and is present working toward his doc-
tor’s degree.

The personnel of the faculty at C. S. M. for the coming
school year is almost complete. Other members are, W. B. Jacobsen, University of Utah graduate, appointed to fill the vacancy in the metallurgy department, and S. A. McCoS, the new instructor in civil engineering. Both
these men will be in Golden the latter part of August.

Miner’s Mother Visits School

A Mines mother, Mrs. L. S. Austin, whose son, Arthur
Austin, ’95, died in 1914, paid a visit to her boy’s alma
mater, July 3. Mrs. Austin is the widow of former Pro-
Fessor Austin who died in California last year.

While her son attended school, Mrs. Austin made her
home in Golden when houses were still rather scattered,
and before the streets were paved. Guggenheim Hall
had not then been built and the men’s dormitory a row of
shacks. She stated that her son was one of the delegates
sent by President Alderson to receive the $50,000 check
from the Guggenheim Foundation to open the school.

Another veteran mining engineer passed away early in

REICH, H. Zur Tage der regionalen, magnetischen Anoma-

REICH, H. Magnetische Messungen in Oberschlesien. Jahr-

REICH, H. Magnetische Anomalien des Carbons. Zeitschrift
fUr Geophysik Jahrgang 4, Heft 2. pp 315-344.

KOENIGSBERGER, L. A series of articles in the Oil and Gas
Magazine for August, 1929. A. I. M. M. E.

MAGAZINE

for August, 1929

Vetemt Goes Beyond

Another veteran mining engineer passed away early in
July. Mr. F. W. Hills, father-in-law of James B. Hill, ’01, did
at his home on the Island of Cyprus after a brief illness.

Mr. Hill’s long and successful career was begun in Colorado. He was city engineer at Pueblo and Cripple
Creek, and consulting engineer for Portland and Ajax and
other mines at Cripple Creek. Besides his activities at
these Colorado mining properties, Mr. Hill was manager
of the Schettina Mines, Napa, and, for some years, of the
Tungsten Corporation.

For forty years he was engineer for the Cyprus Mines
Company, copper mines on the Island of Cyprus. He was
also a contributor to leading mining societies and jour-
nals.

Mr. Hill was a member of the American Institute of
Mining Engineers, Canadian Mining Institute, Institution
of Mining and Metallurgy, and a director of the American
Scientific Society.

He belonged to the Sons of the Revolution and the Col-

Mines Grad Heads Department

Or, William A. Manuel, professor of chemistry at Ohio
Western University, and a Mines graduate, has been
named by university authorities as new head of the de-
artment of chemistry.

Mr. Manuel was graduated from DePauw university in
1912 with the degree of bachelor of arts. He later
received an M.S. from the University of Illinois, and in
1928 was awarded the doctor of science degree from the
Colorado School of Mines.

From 1921 to 1929 Professor Manuel was connected
with the department of chemistry at Western State col-
lege, Colorado. He is a member of Phi Beta Kappa and
many other academic societies.

Professor Manuel is the author of “Colorado Coals,” a
School of Mines Quarterly. He has written various other
articles dealing with the application of chemistry to
industry.

General Hale Passes On

General Irving Hale, pioneer, scholar, and hero of the
battletide, died at his home in Denver, July 25. General
Hale was awarded an honorary degree by the School of
Mines in 1905. With his death, comes to a close his twin
careers of scholarship and military achievement which in
two years has paralleled in American history.

General Hale was a member of the first graduating class
of East High School, Denver, where he was the homebane
of that class.

Following his graduation from high school he operated an
express service between Central City and Grand Lake,
Colorado.
Dear Mr. Colburn:

I am returning the address slip which came in the mail today. It is correct with the exception of my business address. I have none at present.

My chief occupation since last November has been attending the classes at the Chicago business college. The only thing I know about the art of accounting was a short course in college accounting which was given by Prof. Harry Wolf. This and a knowledge of the work which I did in August up to date. The courses which you reach the end of a fiscal period and try to make the trial balance balance. The main problem is making the book show what the satisfaction of the teacher which is followed by a balance sheet and the final balance is the profit and loss statement.

The most important thing about the course is that there are no letters. They will just tell you how to do the job and tell you how to do the job in the future. After we have done about twenty of these and have one which is called The First Practice Set. This form of the course contains a full set of accounting books. Later they give you another and more difficult one with a lot of extra things. The examination, notes payable, and receivable, interest expense and income, postage and postage used, freight and drayage in and out, etc.

The last two, and far more hazardous, are the third and fourth sets which deal with partnerships and corporations. If a student can possibly finish these, he is given a diploma. Then just try and find a job. That is the hardest part of the whole business.

Yours very truly,


My dear Mr. Colburn:

I have just received your communication.

It may interest our friends to know that Amost Abadilla, '20, has gone to Para under contract to do geology.

Another bit of news at which I am very happy is the receipt of my diploma from the University of Chicago, for my election to Sigma Xi.

I am now engaged in consult with the work of my masters. I am also opening a gold mine in Havana or Long Island.

This is my two-year course. I am supposed to have both the mining engineering degree, and the degree in mining engineering. I am also working on the mining engineering degree which is very thorough.

Yours truly,


U. S. FOUNDRY, Inc.


3795 Williamson Street, Denver

Aluminum and Carbon Steel Castings

For mantles and liners for ball mills

MOLLY-CHROME

gives service far superior to any other castings on the market.

One specialty is

MOLLY-CHROME

STEEL CASTINGS

Manufacturers of

"National" Brands Safety Fuse for use in all Blasting Operations

Brands

Silicate

White Monarch

Black Monarch

White Acme

Black Acme

Double Taper

Tinplate

The National Fuse & Powder Co.

Denver, Colorado

Established 1900

Rocks, Mountain Distributors—Cordova-B sockfd Dentonizing Fuse for deep well blasting.

Write for the Rates on Card Supplies

Storage Tanks

For Gasoline, Oil and kindred products

Compensator Tanks, Base plates and all kinds of Components and sheets and plates in Denver Warehouse.

Eaton Metal Products Co.

Denver Colorado

MINERS EVERYWHERE!

Let Us Serve Your Needs

Engineers' Supplies, Books and Magazines

Robinson's Book Store

Golden Colorado

The Ruby National Bank of Golden

The Miners' Bank

Thoroughly Reliable and Competent

More Power to Mines and Golden

Colorado Central Power Co.

Golden, Colorado

Goldene Fire Brick Co.

Colorado Copper Industry

One of Golden's Mining Businesses

Let Us Serve Your Needs

The Jefferson County Republican

Keep Posted on Golden Through

The Miners' Bank

COLO RADO TRANSPI CT

Gives Yourself a Weekly P amount from the Old Campus—25.00 per Year

ALUMNI LETTERS

Climax Molybdenum Co.

Climax, Colo.

Nevaark, N. J.

July 9, 1930.

My dear Culture:—

I am on the verge of changing my address again, this time to Tampa, Florida, where I will be working with Eddie C. Berppa, Esq.-27, an Associate Production Superintendent for the Heiland Petroleum Co. Please forward any forthcoming mail to me there.

As you know, I have been connected with the U. S. Metals Refining Co., a subsidiary of the American Metals Co., and one of the largest American copper refiners, for several years. The firm is located in the heart of the copper mining district of Southern Arizona, and is justly proud of the fact that it has been a factor in the development of the industry there.

Ralph McMillen, '27, has been at work for the last year, building the new Copper Cliff Refinery at Copper Cliff, Canada. I believe he is to have charge of the mining attack work there. Edward Strachan, '29, who has been around Michigan on his vacation is now back with us. He is in the research department.

Last year, during my trip to Colombia, S. A., I was very pleasantly surprised to find that one of the best known and liked citizens of Barrancas, a large mining town, was none other than the well-known entrepreneur, Mr. Karl Patrick. He was instrumental in building a large, modern and beautiful residential district that really is a new town. I have seen the place up close, probably by now, a larger modern town which has not yet been forgotten.

I am now on the verge of changing my residence from Chevy Chase, Washington, D. C., to New York City. I expect to be there in a few days. I have the pleasure of actually meeting Mr. Karl Parrish, '27, of the town, Mr. Parrish has not for the last two years been putting up, probably by now, a large modern hotel which is rightly the boast of the town. He is also putting up, probably by now, a large modern hotel which is rightly the boast of the town.

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Personal Notes

California claims another native son! Harold Deane Weaver, arrived in San Francisco on June 24, 1936, the son of Mr. and Mrs. Harold Weaver of Golden, who left Mines in 1928, received the degree of Master of Mines and Business Administration from Dartmouth, this past June. His mother, Mrs. J. K. Weaver, drove from Los Angeles to Golden to help Mrs. Weaver to celebrate her fiftieth birthday and make a visit of several weeks.

Mr. and Mrs. Kenneth S. Ferguson of Los Angeles arrived with their little daughter, Jean, on May 26th. Ferguson of the class of 1917, is in his twenty-sixth year of August to help his Miners dad adjust to a new life in Hollywood and his mother, Mrs. W. L. Ferguson, made a visit of several weeks.

Mr. and Mrs. Harold L. Hinkle announce the arrival of their third child, who was born on June 26th, 1936. Miss Hinkle and Mrs. Hinkle are in the hospital where the baby is doing nicely. The child is the first son of the family.

Santia Barbara, Calif., Jan. 18.

Student President Elected

Kenneth Dickey, star pitcher of the School of Mines football team, has been elected Student President of the student body for the coming year. Dickey received 105 votes to 70 for Jack Guth, son of Mr. F. D. Guth, president of the school for the past year. Guth received 134 votes to 81 for Francis Rau, junior vice president of the school for the past year.

The election followed a week of electioneering in which the candidates had a primary election and then the final ballot was held.

John M. G. P. Blank, 20, a native of Golden, is the son of Mr. and Mrs. Kenneth S. Ferguson of Los Angeles, and received from the School of Mines the degree of Bachelor of Science in Mines in the month of July. Dickey is one of the engineers of the Westinghouse organization, has just been promoted to chief engineer, and is now working in Houston, Texas, with Ingersoll-Rand.

Edward W. Crerar, 23, is a native of the city of Golden, and was born in Golden on the thirtieth day of July, 1912. He is the son of Mr. and Mrs. W. L. Ferguson, and graduated from the school in 1930 with the degree of Bachelor of Science in Mines.

He has been in the United States Army since the month of July, 1917, and has been stationed at Fort Bliss, Texas, for the past two years. He is now stationed at Fort Bliss, Texas, with the United States Army.
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General Electric Switchboard

The General Electric Company has announced an enclosed miniature switchboard to control an electrical system from a central point. This switchboard, of unique construction, involves a great saving in space. It is made up of one or more self-contained units arranged in circular formation. When these units are mounted side by side, with molding at front and back, a switchboard of uniform and neat appearance is obtained.

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