tives for mines.

Pressed air; air lift systems; air locomotion; heating; air rodding drills of all kinds, with men in the mask, and prevention of "freezing"; re-pression by falling water; conveyance of air for the purposes of ventilation of air compressors; relative advantage of compressed air and steam for use about the mines; a description of the apparatus used; also, that it is more rapid than the ..

The Parke's Process for Desilvering Lead, and the Colorado School of Mines, says: "Two years ago Professor Peale brought out his book on the subject of Compressed Air Plant, hy Robert Pele, by G. H. Blakemore. A descriptive article on the plants and apparatus used in Montana, with a description of the production of Compressed Air, while the second edition of the book is really a expanded edition of the first, and it would seem that the change in title is really unwarranted; possibly upon the basis of a summary or handbook summarization.

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This is a three-page article, giving some of the practical details of the process as used in Australia.

The Colorado School of Mines Magazine.
to go any place in them. After a crew has become familiar with the helmets they will be used into the mine as building stoppings, clear away falls, and do other work which they might be called upon to do when serv­ing on a rescue party. By doing this they also become used to working with a forty­ pound weight on their back, and learn in addition how to save their strength.

Methods of dressing wounds and the plac­ing of splints on various forms of fractures will be taught, so that in case of accidents the injured man will be turned over to the doctor in better condition than he would be otherwise.

When the car is away from headquarters the mine operator in the district is notified each day where it is located, so in case of an explosion such as the blast that occurred a short while ago, the necessary steps may be taken immediately for the scene, using the first available engine, and will have right of way over other trains. On arrival at the mine the crew will aid in every way possible.

It is the present intention of the Bureau of Mines to station cars in the following places: Rock Springs, Wyo.; Salt Lake City, Utah; Wilkes-Barre, Pa.; Knoxville, Tenn., and Evansville, Ind.

**Engineering and Mining Journal, August 1, 1910.**

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**DETERMINING THE SUN'S DECLINA­TION FROM AN OLD EPHEMERIS**

(By A. W. Warwick.)

Engineers working in isolated parts of the world encounter many unforeseen difficulties. This is especially true in regard to surveying problems, some years ago, while in Colorado, I had occasion to determine the true angle of intersection of two lines. The ephemeris for the current year had been sent for, but had been intercepted or lost in the mail. The problem was to obtain the declination of the sun for the current year from a previous year's ephem­eris.

Of course, this problem could be solved by using the Willy's astronomical computer's methods, but these are generally beyond the mechanical engineer's skill, even if he had the necessary elements for making the calculations.

Under such circumstances an easily re­membered rule which can be applied mentally is useful and accurate enough for almost all ordinary surveying purposes. The rule is:

Take out the double number of the corre­sponding date in the previous year's ephem­eris as well as the hourly difference in seconds; move the decimal point one figure to the left and call them minutes. Add or subtract, inversely as the declination north or south is gaining or losing.

**Principle of the Rule.**

The principle of the rule is simple. The solar year is approximately 365 1/4 days. The normal calendar year is 366 days. Hence the calendar year gains six hours on the solar year. It is obvious, therefore, that the declination of the sun for noon, June 1, 1910, should be the same as the declination as the sun at 6 a.m., June 1, 1909. Hence, by multiplying the hourly dif­ference in seconds (June 1, 1909) by 6 and dividing by 60, gives the correction, in min­utes, to be applied. The declination is gain­ing north, hence the correction must be sub­tracted, and the result is the sun's declina­tion for noon June 1, 1910.

It is obvious that if the ephemera is two years old the correction to be applied must be multiplied by two. Of course, this cor­rection takes no account of the change in the sun's declination due to precession, etc. Remembering, however, that the year would be 20 minutes longer if there were no precon­sion, the declination can be calculated for the current year, even from an ephemera 10 years old.

Leep your cause of confusion if one re­cords that the sun's declination on a certain day 1905 to 1906. To apply the rule, divide the declination of the sun at the time in question by 60, gives the corre­sponding date of the previous year plus one, after Feb. 29. Thus, March 2, 1905, corresponds to March 2, 1906. Hence, to cal­culate the declination March 2, 1906, from the ephemera for 1905, the following steps are taken:

<table>
<thead>
<tr>
<th>Day</th>
<th>Min.</th>
<th>Deg.</th>
<th>Min.</th>
<th>Error</th>
<th>Ephemeris 1905</th>
<th>S 7</th>
<th>14.27</th>
</tr>
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<tbody>
<tr>
<td>Diff for 1 hour 30.8 sec</td>
<td>correction</td>
<td>2.08</td>
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<td></td>
<td></td>
<td>0.00</td>
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**The sun's declination for noon June 1, 1909.**

<table>
<thead>
<tr>
<th>Day</th>
<th>Min.</th>
<th>Deg.</th>
<th>Min.</th>
<th>Error</th>
<th>Ephemeris 1909</th>
<th>S 7</th>
<th>14.27</th>
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<tr>
<td>Diff for 1 hour 57.26 min</td>
<td>correction</td>
<td>5.67</td>
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<td></td>
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<td>0.07</td>
</tr>
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</table>

The sun's declination was diminishing, hence the correction was added. It is inter­esting to note that, allowing 20 minutes each year, the declination on the 1st of Jan. 1910, was calculated from a 1902 ephemera, with an error of 29.5 minutes, which is quite negligible for the surveyor's purpose when using a light mountain trans­it.

**THE COLORADO SCHOOL OF MINES MAGAZINE.**

Published monthly during the college year (nine months), at Golden, Colo., by the Alumni Association of the Colorado School of Mines.

JAY LONERGAN, '05, Editor and Manager.

Application for entry as Second-Class Matter pending, at the Post Office, Golden, Colo.

Vol. I. GOLDEN, COLO., DECEMBER, 1910 No. 3

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**Editorial.**

The recent disaster at Delagua is keenly felt by the Alumni Association and the Colorado School of Mines, in that one of our members, William W. Evans, class of 1908, was one of those who passed out of this life as a result. Until recently he was engineer at the Starkville mine, and after the explosion of that mine aided in the rescue work as a helmet man. Shortly before the explosion at Delagua he was placed in charge of the Colorado Fuel and Iron Company's rescue car. Upon receipt of news of the Delagua explosion the car was ordered to the scene. On entering the mine, shortly after the arrival of the car, four miners were found in one of the entries, where they had saved themselves by breathing themselves in a room where the air was still fair. In their weakened condition they could not be safely carried through the foul air in the entry. Evans saved his oxygen bottle to one of them, and was himself overthrown by black dust. Shortly after the party left him in the room in which the men were found, where he was to remain till they returned. All ef­ forts to revive him were of no avail. The body was brought to Denver, where it was buried Sunday, November 13, 1910.

The recent disaster at Delagua is keenly felt by this magazine, in that he was the first to respond to the call for contributions, writing the "Starkville Mine Explosion," which appeared in the November issue, and had promised another article on rescue work at a later date.

As a result of the recent ore mine dis­asters, the special session of the Legislature, shortly after the Blacksville explosion, passed a resolution authorizing the Governor to ap­point a commission to investigate the causes of mine explosions and to formulate remedial legislation and report to the Eighteenth Gen­eral Assembly. It is the intention of the Governor to be a basis to formulate new mining laws to better protect life and property.

The commissioners are: Chairman, Presi­dent Victor C. Alston, of the Colorado School of Mines; Professor John B. Blair, of the University of Colorado, and Deputy Mine Inspector James Dalrymple.
TIGERS WIN FROM MINERS.

**SCORE, 56.**

Colorado Springs, Colo., Oct. 29—The finest football battle ever witnessed on Wadsworth field ended at dusk tonight with the score of 8 to 0 in favor of Coach Rothgeb's Colorado College Tigers and the Miners from Golden, the nothing and the deal. It was a case of the new style of football against the old, and speed vs. head, as the Miners outwitted the Tigers for four pounds to the man.

The Tigers more than held their own in the first two periods, and then turned in a literally as the Miners lost half their seats in the second and third. While the only touchdown of the game was made in the second period, when Vandemore crossed the line with a beautiful interference for the necessary yard and a half, the half was in Miners territory every minute of the last two periods, and the Tigers failed to carry the momentum on to the last half of a dozen times when within the twenty-yard line by taking the ball out when straight football might have settled them a much larger total. Not a Tiger was forced to leave the game, while Coach Stout was forced to put in a half dozen new re­crits in the last period to relieve men who were either too thoroughly exhausted or too badly hurt to play.

No score in First Period.

The first period of the game ended 0 to 0, although there was a dispute toward the close of the period as to whether a punt caught by a Tiger behind his goal was a safety or a touchback. It was clearly a touchback, however, and all the officials so ruled with one accord. This was ten minutes after the game opened and came when the ball was forced to kick from the 35-yard line, where they secured the ball on a punt. Vandemore was held on the 15-yard line, where they secured the ball on a punt.

No Score in First Period.

The Miners were beaten for the good and sufficient reason that they could not play the game as well as can the Miners. When Crowley would start toanje, the ball would be predictably within almost perfect interference, but when a Miner was sent around he had to go alone.

It was the general opinion of those who saw the game that the Miners in as good condition as when they entered the game.

Tigers' Line in Great Form.

One of the big surprises of the contest was the way the Tigers' line played. They rushed the heavy Miners forward off the field and after time tipped great holes in the line, showing their seams all cracked. In the beginning, and during the entire game, the visitors made their determination forced to kick or try a forward pass on every third down. The Tigers, on the other hand, covered the necessary ground through the line and around the ends repeatedly during the first and second periods and almost at will in the third and fourth.

Another surprise of the game was that the Tigers, although they persisted constantly to try forward pass, in which they were supposed to be so astute, worked it successfully not more than four or five times. Their failure to put it off as it was attributed by Coach Rothgeb to the fact that the Miners used unwise interference, carefully validating the rules so that the officials could not see their work.

Vandemore a Star.

The bright star of the game was Captain Vandemore of the Tigers. Van was simply unstopable. Every few minutes he plunged through the line, entered the end or carried the ball through the mass of players on a trick formation that brought the two the necessary yards to their line, with excitement.

Even after he was tackled he frequently gained his feet before the ball was declared dead, and continued on his journey toward the goal line. He also contributed Stanford's average of twenty yards to the punt.

But Vandemore had a close rival in Wolf, the plucky Miners' quarter. Wolf wriggled, twisted, jumped, sprinted and crawled, until the fans became fully electrified. He ran the ball after catching a pass was one of the most spectacular features of the game, which was full of assualtions.

The Miners' runners were out 40 large yards and had enough not to satisfy the crowd of 5,000 people who was present. The Miners also had their chances, but the Tigers outmatched D. U., even though the defense bested the game.

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The game with the University of Wyoming the Miners was forced to play on the offensive, and it was only a break in the weather which gave them a 5 to 0 victory.

The score was 8 to 6 in favor of Wyoming, and less than six minutes to play. Quarterback Burgess of the Cowboys, who had the mistake of accepting a kick-off on his thirty-five yard line for scrimmage, Burgess followed this error of judgment by another when after catching the ball he walked up the field instead of running. Had he run he would have recovered the ball thirty to thirty-five yards, but as it was the Miners were slow in getting down the field. Burgess missed and trotted leisurely up to the twenty-yard line, and when a Miners man tackled him he dropped the ball. It was recovered by the Miners and the touchdown quickly followed. When Burgess kicked the punt he gave his team the victory.

The game was witnessed by a fair-sized crowd. Despite the fact that Wyoming is not in the Rocky Mountain Conference, the Mines fans attended the game. The Mines' victory was expected.

Captain Douglas of the Miners won the toss and chose to kick off. The ball went over the goal line, and was brought out to the twenty-yard line. The Cowboys could not gain and after a general scramble by all the players, Hill of Wyoming recovered at the fifteen-yard line. The Cowboys could not gain and Burgess dropped back to the twenty-yard line and dropped a punt, making the total score one point in favor of Wyoming.

On the kickoff by the Miners, Burgess caught the ball on the twenty-yard line instead of allowing it to go across for a touchdown. The Cowboys, however, made a reasonable gain, and after a general scramble by all the players, Mill of Wyoming recovered at the thirty-five-yard line. The Cowboys could not gain and Burgess dropped back to the twenty-yard line and dropped a punt, making the total score one point in favor of Wyoming.
Y. M. C. A. Notes.

We proceed to observe, during the week of November 15, the 100th anniversary of the founding of the Young Men's Christian Association. It was founded on this day in 1844 by John Henry Newman, a British university student, and his friends. The Y.M.C.A. has since become a worldwide organization with millions of members dedicated to promoting Christian values and helping young men and women achieve personal growth and social responsibility.

We also observe, during the week of November 15, the 100th anniversary of the founding of the Young Women's Christian Association. It was founded on this day in 1850 by Elizabeth Cady Stanton, a leading women's rights activist, and her friends. The Y.W.C.A. has since become a worldwide organization with millions of members dedicated to promoting Christian values and helping young women achieve personal growth and social responsibility.

We observe, during the week of November 15, the 100th anniversary of the founding of the Y.M.C.A. and Y.W.C.A. Together, these organizations have served millions of young people around the world, promoting education, health, and social justice. We honor their legacy of service and commitment to the well-being of young people everywhere.

We conclude our observance of these important anniversaries by offering our gratitude to all who have served in the Y.M.C.A. and Y.W.C.A. We are inspired by their example and we commit ourselves to continuing their work of promoting Christian values and serving young people in need.

The Student Volunteer Convention.

The Student Volunteer Convention is a biennial event that brings together young people from around the world to explore issues of faith and service. This year's convention is being held in Denver, Colorado, and is expected to draw thousands of participants from across the United States and around the world.

The convention will feature keynote speakers, workshops, and plenary sessions on a wide range of topics, including faith, leadership, and social justice. Participants will have the opportunity to engage with each other and with leaders from the Y.M.C.A. and Y.W.C.A. to discuss ways to make a difference in their communities and in the world.

The convention will also feature a number of other events, including a service project, a concert, and a talent show. These events will provide participants with the opportunity to express their creativity and to connect with each other in a fun and vibrant environment.

We encourage all young people to attend the Student Volunteer Convention and to participate in the events and activities that will be offered. We believe that this is an important opportunity to learn, grow, and make a difference in the world.

The Alumni.

The Alumni is a publication of the Y.M.C.A. and Y.W.C.A. that features news and updates about the organization's history, programs, and achievements. It is a valuable resource for anyone interested in learning more about the Y.M.C.A. and Y.W.C.A. and the important work that they do.

The Alumni is published four times a year, and it is available online at the Y.M.C.A. and Y.W.C.A. websites. We encourage all young people to read The Alumni and to stay connected with the Y.M.C.A. and Y.W.C.A. to learn about the important work that they do and to get involved in their programs and activities.
PERSONALS.

85. Walter H. Wiley is at present making a three months' trip to various mining districts in Peru, South America.

86. Charles A. Guzman, for some time past located in Goldfield and other Nevada mining camps, is now permanently located at San Francisco, with an office in the Mill Building. On November 14 he was in Golden and delivered an address on "Prospecting" to the Junior and Senior classes.

87. William J. Buntley, formerly connected with the mining and smelting industries at Pueblo, Denver, Mexico, is now in Canada, working.

88. At the recent election George M. Post was re-elected county surveyor for the City and County of Denver.

89. John Gross is at present in Sonora, Mexico.

90. Arthur H. Roller, manager of the Hudson Mine at Illinois Springs, Colo., has remodeled the mill in such a way as to decrease the cost and increase the percentage of saving.

91. The Alumni Association gave a Dutch luncheon to the graduates of the School No. 241 pages, $2.00.

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ore to the refining of the precipitates. A subject from the initial crushing to the finished by cyanide superintendents. Reviews by Mark B. Lamb.

An article compiled from information furnished the assayer and chemist. Valuable article which should be in the notes of every assayer and chemist. Assay of Arsenical Nickel-Cobalt Silver Assaying. Present Tendencrtes in Cyanide Practice, by H. C. Pardee.

Mining Methods employed at Cananea, Mexico, by A. H. Martin. Mining World, Vol. 33, No. 19, p. 805. Gives a summation of the difficulties found in electrostatic and magnetic separation, in this section.

1910, p. 804. An article giving a description and plans of a district in successful operation at the Menacha Damel Gold Ore in Brazil, by H. K. Kelch. Mining World, Vol. 33, No. 19, p. 805. An article giving data on a new royalty system which is claimed to be fair to both the lessee and lessor.

The practice of the Ouro Preto Mine is given in full under the following heads: Character of ore; treatment of ore; treatment of concentrates; treatment of sands; treatment of slime; cleaning of zinc-lead precipitates; and roiling of gold.

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trubished through a flaky crystalline ground moraine, which is colonized by a variety of lichen-covered rock, as the original porphyry tuff. On the western slope, the stock is cut in many places by diabases of quartzo-feldspathic composition, or granodiorite, and the stock is intersected by a number of quartz veins. South of Misery Pass, on the western slope of Smith Valley Range, a similar schist occurs. On both slopes of the range, masses of felsite and foid are overlaid by the schist. These are small and isolated, as is usual.

There is one fairly continuous band on the eastern slope which contains the Western Nevada, McConnell, Mason Valley and Blue Jay mines. It is about 1,000 feet wide and dips a little north of the horizontal. A similar band on the west slope, near the base of the range, contains the Ludwing, Nevada Douglas, Tiberia and Nevada Queen mines. The majority of the foidite is meta-igneous, morphologically, although some of it is of the pure crystalline variety. That which has been altered contains garnet, pyroxene, amphibole, epidote, and pyrite. The rocks resulting from the metamorphism of the Lower Tertiary volcanic rocks, are the most characteristic. It is possible that the metadiorite is a mixture of feldspar, feldspathic and amphibolitic rocks and the entire range of possible rock types.

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Malakite Mine.
The Malakite mine is situated one-half mile south of the Tuscan Valley mine, on the same general road as the mineralization. The reefs are several yards wide and were worked in the early days of the district, and from which partially oxidized ore was taken, similar to that of the Tuscan Valley. The present work done on the ore body consists of a shaft in the limestone below the old tunnel, designed to reach the ore body at considerable depth.
The ore body here is similar to those of the Tuscan Valley.

McConnell Mine.
The McConnell mine is about one-half of a mile south of the Malakite and two miles from Mickey Pass. The ore body, which creeps for a considerable distance northly and southerly, is about 300 yards wide and is composed of mineralized limestone. The western contact and the eastern contact is a fault. The limestone is a fine-grained, gray veined, and is not much altered. This ore body is the eastern section beyond the gap. The pre-Mississippian granodiorite is found in this fault. There is a fault where the limestone hanging wall is completely broken and the footwall is the limestone. A shaft 400 feet deep was sunk in the limestone near the mouth of the main tunnel. The ore body here is not very productive of the Tuscan Valley Mine. It is about a mile south of the McConnell on the same road.

Western Nevada Mine.
The Western Nevada mine is about one-half mile south of the McConnell on the same mineralized belt. The ore bodies lie in a zone of mineralization almost one quarter of a mile wide, and consist of irregular bodies of sulphides and carbonates. Some of the ore bodies are close to the granite and some are separated by a gray, unaltered limestone.
The contact between the limestone and granite is due to faulting, with a sharp contact to the east. A seam of granite on the southeast and the limestone hanging wall in the northwest. The fault is one of the principal mineralized. Most of this fault there is a zone of contact, which covers the ore, and the eastern contact is a fault. A seam of granite on the southeast and the limestone hanging wall in the northwest.

There are cappings of younger lavas over the ore body, and the ore body is exposed on the surface. These lavas are found in connection with the absence of syenitic gneiss or of quartz veins in the granite. The ore bodies are found in connection with the absence of syenitic gneiss and of quartz veins in the granite. The ore bodies are found in connection with the absence of syenitic gneiss and of quartz veins in the granite.

The Nevada Douglas Mine.
The Nevada Douglas mine is situated on the crest of a small spur, about two miles west of the Malakite Valley mine, and 500 feet above the valley. The country rock consists mostly of limestone, which is extensively and irregularly altered to garnet rocks. This granite-gneiss zone is about 300 feet wide and strikes northerly and southerly.
The ore body is mostly carbonated, and consists of malakite, malachite, and chrysocolla. Below the carbonated zone, there is a zone of crushing in the limestone, with the carbonated limestone hanging wall and the limestone footwall. A baffle of this fault is found, which is a fault where the granite-gneiss is cut by the limestone intrusion. About 300 feet wide and strikes northerly and southerly.
The ore body here is similar to those of the Tuscan Valley Mine. The ore body here is similar to those of the Tuscan Valley Mine. The ore body here is similar to those of the Tuscan Valley Mine. The ore body here is similar to those of the Tuscan Valley Mine.

ORE DEPOSITS OF THE SECOND CLASS

Metamorphic Vein Deposits in Altered Limestone.
The Ludvig mine is situated on the west side of the Tuscan Valley range at the edge of South Valley. The mine is about one-half of a mile south of the McConnell mine. The Ludvig mine is about one-half of a mile south of the McConnell mine. The Ludvig mine is about one-half of a mile south of the McConnell mine.

The ore body of the first class comprises a number of small tunnels. The ore body of the first class comprises a number of small tunnels. The ore body of the first class comprises a number of small tunnels.

There are cappings of younger lavas over the ore body, and the ore body is exposed on the surface. These lavas are found in connection with the absence of syenitic gneiss or of quartz veins in the granite. The ore bodies are found in connection with the absence of syenitic gneiss and of quartz veins in the granite. The ore bodies are found in connection with the absence of syenitic gneiss and of quartz veins in the granite. The ore bodies are found in connection with the absence of syenitic gneiss and of quartz veins in the granite.

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The ore body of the second class comprises a number of short tunnels and open cuts on oxidized ore, with one open cut about 300 feet long in the dacite member, unaltered metamorphic silicates, and by formation of new minerals. This is a fault where the granite-gneiss is cut by the limestone intrusion. About 300 feet wide and strikes northerly and southerly.
The ore body here is similar to those of the Tuscan Valley Mine. The ore body here is similar to those of the Tuscan Valley Mine. The ore body here is similar to those of the Tuscan Valley Mine. The ore body here is similar to those of the Tuscan Valley Mine. The ore body here is similar to those of the Tuscan Valley Mine.

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The Colorado School of Mines
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No. 4.

Editorial

When, at the beginning of the present school year, the Alumni Association employed an Assistant Secretary, it was the intention that he should place the previously established Capability Exchange on such a basis that it would be of more benefit to the graduates and undergraduates than it has been in the past. After a trial period of four months, in which the service was grazed, it has been found necessary to secure funds to carry on the work of the department properly. The Income from the annual dues, paid by the members of the Association, is just sufficient to pay the general running expenses of the Association; so it is only fair that those who benefit by securing positions through the Exchange should stand this extra expense by the payment of a reasonable commission.

In the Alumni section of this issue, the action of the committee appointed to investigate and draw up the necessary plans, the ratification of those plans by the Executive Committee, and the terms of the contract to be signed by the applicants, are given more fully.

"The Assistant Secretary desires to call particular attention to the letter of Mr. Herbst, published under Alumni News, and the reply of the President thereto. The Assistant Secretary would be glad to receive and publish letters addressed to the Alumni, discussing the criticism raised by the circulation of Mr. Herbst's position. The Assistant Secretary would be glad to receive and publish letters addressed to the Alumni, discussing the criticism raised by the circulation of Mr. Herbst's position.

"How are we going to accomplish anything as an alumni association unless we pull together? Although Mr. Herbst may not feel that his brother alumni can do him any good, it is more than probable that by joining the association and lending his support and encouragement, he will be able to help them."