The Wisconsin engineer. Vol. 27, No. 1 October 1922

Madison, Wisconsin: Wisconsin Engineering Journal Association, [s.d.]

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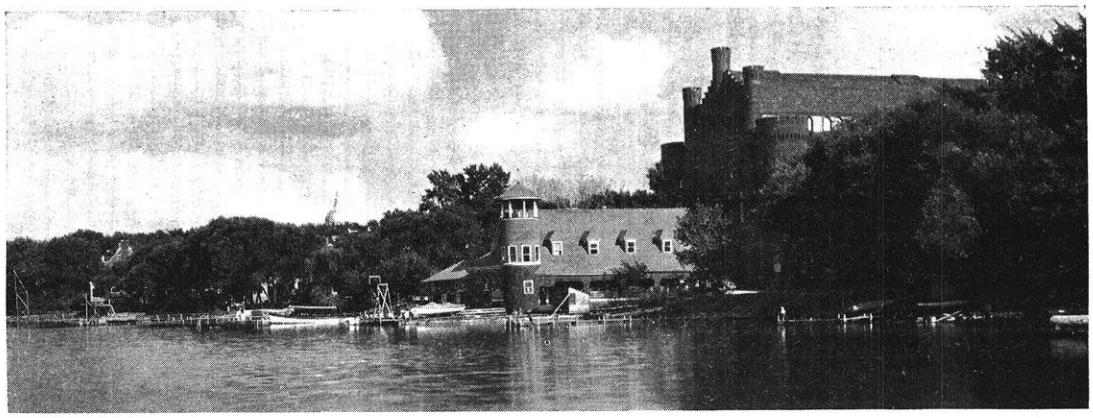
VOL. XXVII OCTOBER 1922 to May 1923

The WISCONSIN ENGINEER

Published by the Engineering Students of
THE UNIVERSITY OF WISCONSIN

Founded 1896

Published at Madison, Wisconsin



Subscription Price $1.50 per Volume of Eight Numbers

Office Copy

Issued Oct 17

1400 Copies - (?)

Club 370 50

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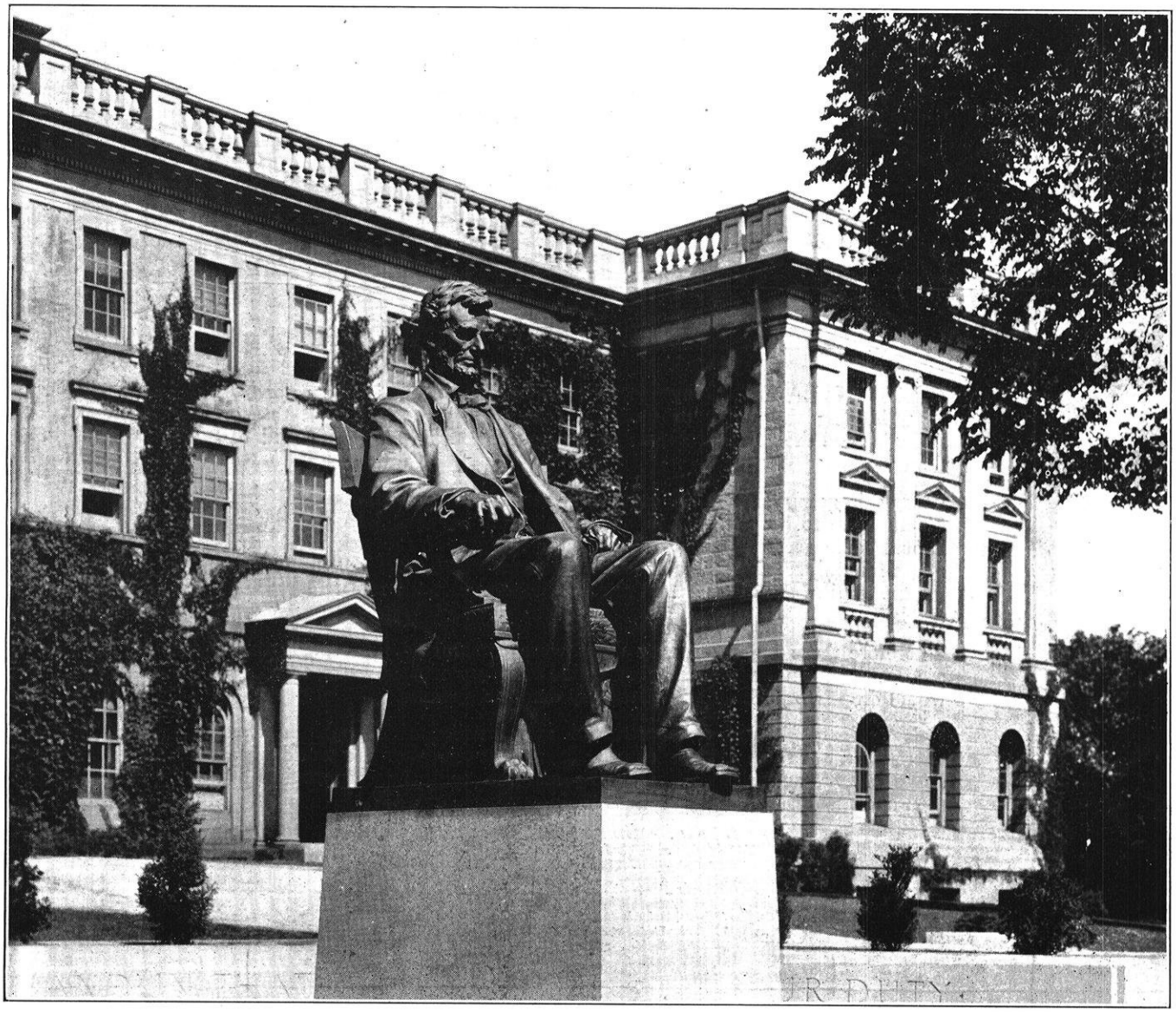
Member Engineering College Magazines, Associated



The

WISCONSIN ENGINEER

Founded 1896

25c
A Copy

Published monthly from October to May, inclusive by
The Wisconsin Engineering Journal Association
306a Engineering Building, Madison, Wisconsin
Telephone University 177

$1.50
A Year

CONTENTS

VOL. 27 OCTOBER, 1922 NO. 1

 Entered as second class matter Sept. 26, 1910, at the post office at Madison, Wis., under the Act of March 3, 1879. Acceptance for mailing at special rate of postage provided for in section 1103, Act of October 3, 1917, authorized October 21, 1918.

The Wisconsin Engineer

UNIVERSITY OF WISCONSIN

VOL. XXVII, No. 1 MADISON, WIS. OCTOBER, 1922

HOW TO CHOOSE DRAWING INSTRUMENTS

By Herbert Denny Orth

Associate Professor of Drawing and Descriptive Geometry

To the average young man of today, the intelligent selection of a set of drawing instruments presents about as difficult a problem as does the selection of an automobile. These problems are alike in that there are various types, makes, and prices of both automobiles and instruments. They may be different in that the purchaser is not so apt to have had opportunity to familiarize himself with the features which make for quality in a drawing set, as he has to know the latest developments in automobile design. In most cases the choice of a set of drawing instruments is made only once in a life time. The time and money spent on a careful selection will be more than repaid in the satisfaction gained from instruments which will stand the test of use without exhibiting flaws in workmanship or material. The common notion of buying a cheap set to begin with and a more expensive set later is to be condemned. It is the more expensive plan in the long run, but a far more important reason lies in the fact than an inexperienced man needs good tools if he is to make the best showing for himself.

In instruments, as in automobiles, some of the elements of quality are apparent to the eye, some may be found by careful and intelligent inspection, and others can only be ascertained after long use. This article will deal mostly with those features and qualities which may be observed or determined by the purchaser himself or with the assistance of a more experienced friend. Such qualities as the proper temper of steel can only be known after a long period of use, and, therefore, the buyer must place considerable confidence in the trade mark of a reputable manufacturer and the honesty of the dealer.

While the bulk of drawing instruments are of foreign manufacture, it should be noted that instruments of first quality are made in America.

World war conditions stimulated the manufacture of instruments in this county, and, while the product was crude at first, several very creditable sets have been developed and are now in production. Due to the vastly different labor conditions in this country and in Europe it is imperative that in this country machines be made to do much of the work that is done by hand in Europe. While this does not necessarily impair the quality of the instruments it makes advisable certain changes in design to adapt them to our modern production methods.

Materials

The best drawing instruments are made from nickle silver and tool steel. Nickle silver has the most suitable qualities for this purpose when cold rolled. In this form it is dense and of uniform grain, giving the utmost rigidity in the instrument with a minimum amount of weight. The parts are cut from the rolled stock thus allowing the metal to retain these important qualities.

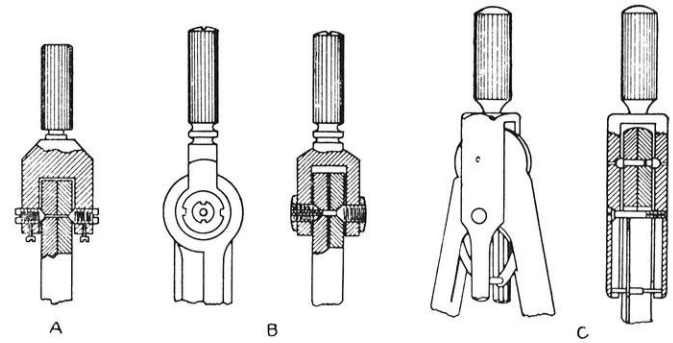


Fig. 1

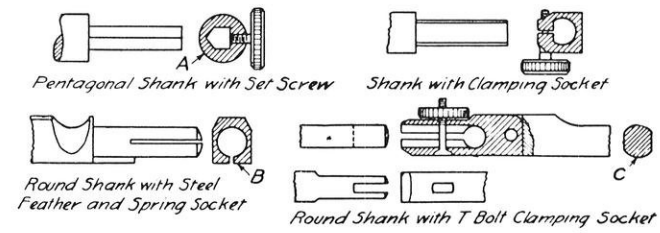


Fig. 2

Fig. 1. Pivot Joints. *In Type A, it is essential that the fork be strong enough to withstand the strain set up by the screws which hold the legs together. In Types B and C, through screws take the strain.*

Fig. 2. Interchangeable Part Joints. *All of these designs include a means of aligning the shank in the socket. There should be no lost motion in these joints when clamped.*

The manufacturers' catalogs show many instruments for special purposes, but only those commonly used by the average draftsman will be considered here.

Compasses and Dividers

A compass 5½ to 6 inches long (over all) is found in practically every set of instruments. In modern compasses the legs are held together in a pivot joint at the head. There are various forms of pivot joint as illustrated in Fig. 1. It is essential that the fork or

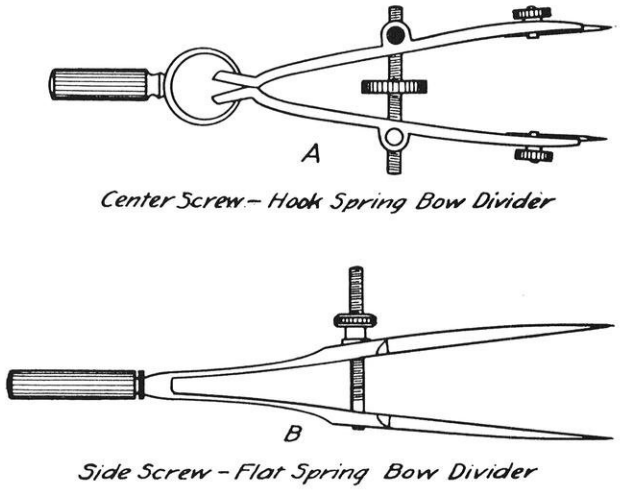


Fig. 3

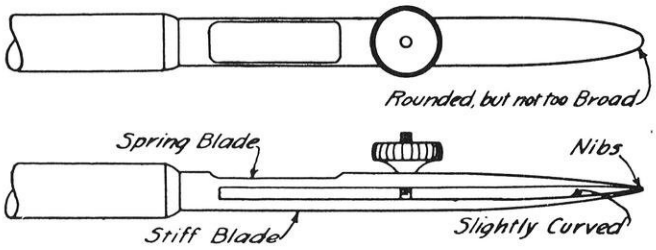


Fig. 4

FIG. 3. TYPES OF BOW DIVIDERS. *The spring steel, which must be used in the flat spring divider, will rust unless properly cared for. The use of the hook spring permits the use of nickle silver in the legs, and, furthermore, gives nearly uniform pressure throughout the range of the instrument.*

FIG. 4. THE RULING PEN. *The nibs of a well made pen are set accurately opposite each other and are of exactly the same length.*

yoke be strong enough to withstand the strain set up by the screws in the type shown at A. In types B and C the through screw takes the strain thereby relieving the fork and making a lighter construction possible. The workmanship on this joint must be such that the effort required to spread the legs is uniform at all openings. Lost motion in this joint should not be tolerated.

Some form of straightening device is now commonly applied to the head of the compass for the purpose of keeping the handle in the direction of the bisector of the angle between the legs. A typical device of this kind is shown at C in Fig. 1. Any straightening device complicates the construction of the head, and for this reason, together with the fact that it is not an essential feature of the instrument, some makers scorn to apply them to their highest grade sets. In purchasing an instrument with a straightening device, be sure that the straightener does not interfere with the smooth action of the head joint. The type shown at C Fig. 1 is usually satisfactory. The type (not shown) having a slotted steel washer working over pins between the heads of the legs is used only on the cheaper grades of instruments, and lost motion is apt to develop after some wear takes place.

In a few brands of instruments the compasses and dividers are provided with devices for locking the legs in a fixed position. This construction is of value only in case it is desired to retain the same setting of the instrument for some time and should not be considered an essential detail.

A hairspring adjustment on the compass leg may be an advantage for extremely accurate work, but ordinarily the hairspring is not considered necessary except on the divider where it makes possible very accurate work in transferring lengths and in subdividing distances into equal numbers of parts.

The shank and socket joint by which the interchangeable parts of the compass legs are fastened are made in various forms as shown in Fig. 2. All of these designs include a means of properly aligning the shank in the socket, such as the sharp corner of the pentagonal shank, the feather of the round shank, and the T bolt of the Richter pattern. The shank is held in the socket by the action of the clamping screws or the spring action of the split end of the shank when no clamping screw is used. The T bolt construction is open to the criticism that the pen or pencil part may be inserted 180 degrees from its correct position. The round shank without clamping screw makes the neatest joint, is easiest to manipulate, and, if accurately made, is firm. There should be no lost motion in these joints when clamped.

The bearing faces of the tongue and slot of the knee joint must have parallel surfaces to insure smooth and even resistance in bending the legs. The clamping screw must be designed to maintain a uniform pressure between these surfaces and to serve as a pivot for the leg, without being unscrewed by friction when the legs are moved alternately in opposite directions. The type of compass having knee joints opposite each other in the legs is more symmetrical and better balanced than is the case where the joints are at different positions in the legs.

A good test of the accuracy of workmanship in the head and knee joints of the compass may quickly be

(Continued on page 12)

THE NAVY'S RELATION TO COMMERCE AND INDUSTRY

By R. R. M. Emmett

Lieutenant Commander, United States Navy

The people of the United States are today confronted with their destiny and that destiny lies in great measure on the sea.

The young man of ambition has a different picture presented to him as he goes out into the world, than had his father or his grandfather before him.

For three-quarters of a century the most attractive careers for each rising generation lay at home. Ours was a country of boundless natural resources, of noble opportunities. There was no limit, other than a man's ability, to what would be accomplished at home. Our relations, both political and economic, with the world abroad were extremely simple. There was no economic demand that our people should go down to the sea in ships, and hence we have had no merchant marine worthy of the name. Having no merchant marine to support and secure, our Navy waned to a nominal force, largely composed of old and obsolete ships. It was natural that this should be so. There were no political or economic reasons for maintaining a greater force.

STUDY SEAPOWER

Young men launched into the world today face a new perspective. The United States stands as a world power. Its commerce carried in American ships, manned by American citizens, secured by an American Navy, second to none, will traverse the seven seas.

I know nothing more important to commend to the minds of our young men than, first, to study the inevitable influence seapower will exert on their country's future economic development; and then, to translate convictions gained into deeds which will react to the security, prosperity, and happiness of our great Republic and its people.

Very sincerely,

As the country discovered and developed its great natural resources and grew rich and prosperous, men of vision here and there, all over the country, foresaw the need of securing our prosperity. A start was made toward the creation of our modern Navy. Men preached the need of developing merchant shipping to transport our products throughout the world.

Progress was necessarily slow. Opportunity to live comfortably ashore abounded, and men were slow to earn their bread at sea.

The Spanish-American war, with its aftermath of new interests and responsibilities, pushed on our naval development. The manifest need of securing the Monroe Doctrine from the selfish assaults of foreign powers continued the expansion of our Navy.

The application of the Monroe Doctrine has successfully safeguarded, for one hundred years, the affairs of this hemisphere from complications that might have threatened the peace of the world. It has permitted the people of all nations in the two Americas to work out their national problems without interference or exploitation from abroad.

The outbreak of the World War plunged us, whether we would or not, into the turmoil of world affairs. We have emerged from that conflict, for the present at least, the richest and most influential nation in the world. Whether we are to maintain our present relatively happy position in the family of nations rests with ourselves. There can be no doubt but that the genius and industry of our people, the soundness of our political and economic institutions, will enable us to bear properity as well as we have supported and borne the strife for prosperity. We must, however, take stock for the future.

We have a large and increasing population, a great portion of which has assumed a highly industrial character. Our natural resources have been pretty well discovered, are in the course of development, and can be accurately estimated. If the standard of living of our people is to be preserved; if we are to be fed as American citizens have been fed in the past, we must make better and more scientific use of both our industrial and agricultural resources. Our home markets now, with the passage of the years, approach the saturation point. It is becoming increasingly imperative to produce more goods than we can absorb at home. The building up and development of foreign trade and commerce is becoming an essential to our future economic prosperity.

Mexico and the countries of Central and South America are, figuratively speaking, at our doors. Great opportunities await men of ambition, brains and energy in China, Central Asia, the Near East and in Africa.

If our young men go out into the world to compete

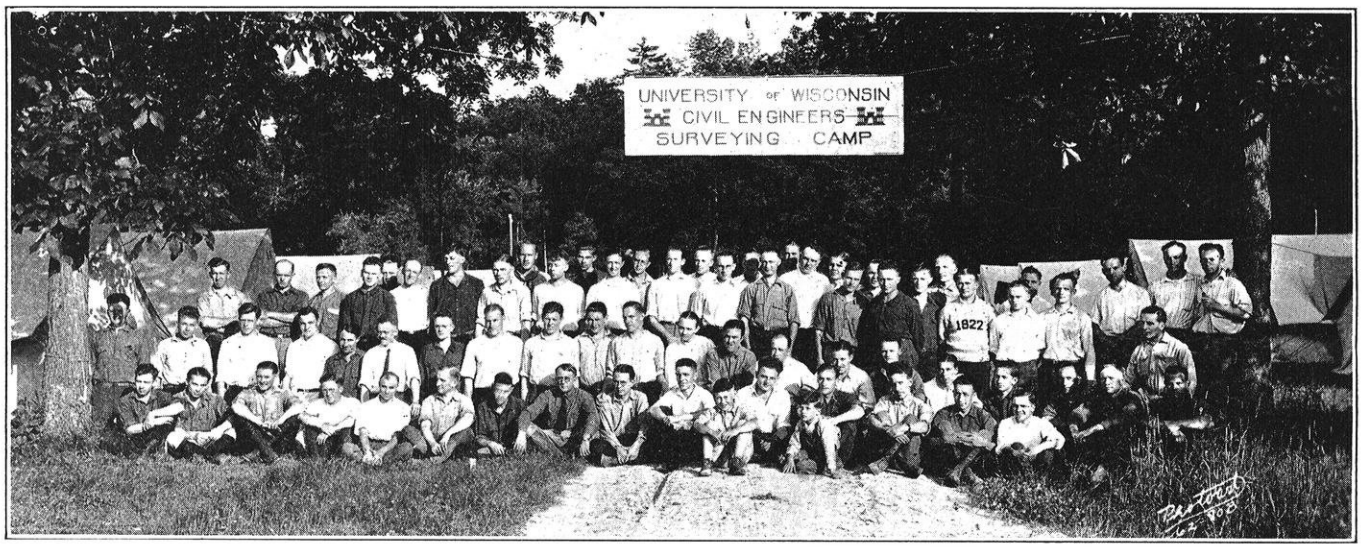
(Concluded on page 20)

THE 1922 SURVEYING CAMP

By L. T. Sogard

Senior Civil

Along just before Christmas each year, "Prof." Owen gently breaks the news that among other things necessary to obtain the coveted sheepskin, "civils" must survey for four weeks some summer at Devil's Lake. Eventually, why not now? Whereupon a groan arises, silently at least, if not audibly. How can they shove any more onto us? Why the ——— sun hasn't shown for two months and I haven't done but one solar problem all fall. Isn't it enough that we gallop all over the campus and town for two years here without spending four weeks at it in camp? Evidently it is not. "Talk it up," says Prof. Owen, "while you're at home so we can get a line on how many expect to attend."



THE 1922 SURVEYING CAMP

First to arrive at the camp and last to leave was our genial charge d'affairs, Ray Owen. On the morning of Tuesday, June 6th, with his old Buick loaded to the gunnels with everything from tents to extra shoe strings, and dragging behind the "Net 500—Load 100—Gross 1500" trailer, he sallied forth for Devil's Lake. Thus began the season of 1922. Friday morning was the date of the great exodus from Madison. With our baggage car hooked on behind the 7:40 train, some sixty embryo engineers set out for the scene of the activities. A motley crew, with variations all the way from the prescribed "1 Sunday suit" and last summer's straw hat, to old, torn trousers and blue shirts, with the inevitable handful of boys in khaki and high boots—our "reel" engineers. Friday was a big day; by organization and a little system, an engineering camp was put up by evening where in the morning was naught but green grass and trees. One crew spotted the tent floors, another erected the tents; a bunch of those who expected to get "all tanned up" put in several hundred feet of pier to the swimming hole. Working in a blistering sun with bare arms and shoulders, they changed color; but instead of the highly prized tan, they acquired a flaming red. "Oh, I never burn, always tan," said they; but old Sol went back on them this time and for several days their skins were the kind "*you'd* love to touch"; just a friendly slap on the shoulders and a How are you, old man? Ou—! you *—!#—, look kout! Shoulders sore? Beg your pardon; awfully sorry.

Two feats of construction were undertaken and nearly completed that day. That old roof of the barn (excuse us, the Topographic and Railway Engineering Building), which leaked like the proverbial sieve, was torn off and a new roof put on. Where last year's dining tent had stood adjacent to the kitchen, stone piers were sunk and a floor of matched timber laid. This work was done mainly under the direction and thru the efforts of one of the students, Joe Maiers. This was the biggest improvement to the camp; with a big top for a roof, "Maiers' Hall" served as a dining saloon, drafting room, club house, and dance hall.

Among numerous other things in the "civil's" curriculum is the building of the A. B. & C. Ry. A two weeks' field and office course is given by the Railway Engineering department in the actual planning and locating of a railroad. Previous to 1922 this work was done on the University campus during the two weeks following the close of school, but this year it was decided to give the course at Devil's Lake in conjunction with the topographic engineering, so that those who so desired could "clean up" all the summer work in one six weeks' session. Those juniors and seniors, numbering about forty, who had taken the T. E. during some preceding summer took the railways course the

(Continued on page 12 Adv.)

EDITORIALS

A GREETING FROM THE DEAN

This is the beginning of a new year, and I take pleasure in extending, through the columns of the WISCONSIN ENGINEER, the greetings and good wishes of the Engineering Faculty to the students of the College. THE WISCONSIN ENGINEER is entering its twenty-seventh year, and is getting to be quite an old institution. Some of us can remember its tender years when there were many doubts of its surviving the critical period of infancy, and again when attacked by the diseases of childhood, its parents and sponsors trembled for its life. The good doctors have, however, pulled it through, and now it is a real adult, and well established as an important institution of the College of Engineering. Its face is a familiar one to all old students, and we hope it will soon become so to those who are here for the first time. Not only does it serve as an organ of publicity for the College of Engineering, but also, and more importantly, as a means of training for the many students who, during their college course, take some part in its production.

Those who are just beginning their college training will find themselves confronted, sooner or later, by the problem of outside activities, and with some students this will perhaps take the form of activities versus studies. Let no one be led into the belief that these activities come first and studies second. It should need no argument that conscientious and painstaking work is necessary to success as a student. It is also a most important factor in the enjoyment of recreation and in the participation in outside activities. Much of value can indeed be obtained from such outside work, and it deserves serious consideration. Each man must decide for himself what and how much he can profitably do. Our only suggestion here is to go slowly and cautiously. Treat the matter as you would an engineering problem: Here are the facts and the elements of the problem; here are the results desired. What are the necessary processes to bring about these results? A good engineer is cautious and conservative, not a speculator and plunger. It is well to adopt the same attitude toward your problems of college life. It is the earnest desire of the faculty that you may make the most of the four years, and leave the institution well prepared to become successful engineers.

F. E. TURNEAURE.

"Our knowledge of civilization now goes back at least to 6000 B. C., and we are told that since then there have been no less than six distinct civilizations; that, like man himself, they have all been born, come to maturity and died, a new one springing from the ashes of the old."—Dean M. E. Cooley, Michigan.

THE IMPRESSION YOU MAKE The junior year, often looked upon as the most gorgeous of the four college years, brings with it a critical point in student development which the average junior does not realize until too late. The professional studies, which begin at this time, bring the student engineer into contact with the older men of the faculty whose opinion of the student will have an important influence upon the opportunities for employment which that student will have before him at the completion of his course.

The junior should realize early that a change has come into his relationship with the faculty. The men who stand before him in the class room and direct his explorations into this or that branch of engineering are not mere teachers to be ignored, lied to, or defied,—they are professional men who look upon the student as younger brothers in the same line of human endeavor and have a keen desire to help him succeed in the profession.

These older faculty men have much to do with placing graduates in positions; therefore, they study their students and learn to know their good and bad qualities. They recognize and encourage sound qualities and they have an uncanny faculty for putting their fingers upon bad qualities as many a student can testify. As one of the 1922 graduates writes in retrospect, "I don't believe I fooled anyone very much."

It is the part of wisdom for the junior to realize these things at the beginning of his year and apply himself to acquiring the professional attitude. He should "step out" his best qualities for the benefit of these men whose good opinion means opportunity for him.

"Let us consider the engineer as one of the great number of college-trained men, and then ask what has the college-trained man and woman done for the preservation of our civilization?"—Dean M. E. Cooley, Michigan.

HOW MUCH WILL YOU DELIVER? C. L. McMullen, e '09, general sales manager for Fuller & Johnson Manufacturing Company, was trying to sell a pump to wealthy old German who was developing a large irrigation project in the West. "This pump," said Mac

in his most persuasive tone, "has a capacity for so-many gallons an hour."

"Yes," said the customer, "dot's all right; maybe it has dot capacity, but how many gallons vill it *pump?*"

And Mac had to write into his contract, not that the pump had a *capacity* of so-many gallons, but that it would *deliver* so-many gallons.

It seems as though there should be a moral in that story. Probably a good editor could find one.

"It should be possible, by shaping our training through the preparatory schools and colleges, to bring about during the next two or three hundred years an entirely different outlook on life,—an outlook indeed that might well be counted on to delay the arrival of the dark age that has heretofore fallen with the certainty of death itself on all civilizations."—Dean M. E. Cooley, Michigan.

E. C. M. A. Lieutenant Commander Emmett's article on "The Navy's Relation to Commerce and Industry", which appears elsewhere in this issue, marks a step forward in engineering college journalism. This article will appear simultaneously in the fifteen magazines which compose the organization known as Engineering College Magazines, Associated, or, for short, E. C. M. A. The combined circulation of these magazines is about thirty thousand,—a large enough audience to interest any one who has a message for engineers. E. C. M. A. expects to be able to present to the readers of the WISCONSIN ENGINEER, from time to time in the future, other articles from men of eminence.

A man may have a great mass of knowledge, but if he has not worked it up by thinking it over for himself, it has much less value than a far smaller amount which he has thoroughly pondered.—Schopenhauer.

THE MINSTREL SHOW Rumblings of an Engineers' Minstrel show are beginning to be heard. The last show took place on November 12 and 13, 1920. It was a financial success, $372.35 being turned over to the Memorial Union fund. As a show it had many bright spots; and it had some sour ones. It also left some badly damaged scholastic standings in its wake. Such are the facts of the case. If a minstrel show is to be undertaken, it should be undertaken by the whole college and not by one or two ambitious individuals; it should be a carefully planned performance,—well executed; and it should have a genuine engineering flavor. The ENGINEER does not care to agitate for a minstrel show. The price of success in the venture is so great that we do not care to assume the responsibility for loading it onto some one's shoulders. If the show is to be given it should be as a result of a spontaneous and insistent demand upon the part of the whole student body of this college.

PROFESSOR A. E. BERGGREN

IN MEMORIAM

Professor Axel Emanuel Berggren, of the Steam and Gas Department, lost his life in an automobile accident which occurred shortly after noon on August 10. He and Professor G. L. Larson had been playing golf at the Blackhawk Club and were returning to Professor Larson's home in College Hills in Professor Berggren's car. As they turned out of the Middleton Road into the road leading to College a car driven by Frank Hoover, who conducts a resort at Middleton, struck the rear of their car and turned it completely over. Both men were thrown clear of the wreckage. Professor Berggren suffered a fracture of the skull and died about 6 o'clock without regaining consciousness. Professor Larson was unconscious for about half an hour but received no serious injury. A coroner's jury exonerated Mr. Hoover from blame and declared the accident unavoidable.

AXEL E. BERGGREN

An abiding good humor, a characteristic smile, and an unselfish willingness to take his share of responsibility in whatever was to be done won for "Berg", as he was usually called, a warm place in the affections of his colleagues; and the same qualities plus a deep and sincere interest in their welfare wove a bond of lasting friendship between him and his students. Such men are rare; their places are hard to fill; and when they go their going is a tragedy. The death of Professor Berggren is keenly felt throughout the college and the university.

Professor Berggren became an associate member of the American Society of Mechanical Engineers in 1915. He was a member of the Society for the Promotion of Engineering Education, Sigma Zi, Pi Tau Sigma (honorary mechanical engineering fraternity), Phi Gamma Delta, and the Masonic Lodge.

* * *

SUMMARY OF PROFESSOR BERGGREN'S LIFE

1882—Born October 16th, at Marshalltown, Iowa.

1900—Graduated Marshalltown (Iowa) High School.

(Concluded on page 19)

WHAT THE MEN OF 1922 ARE DOING

The spring of 1922 was not a good one for the new grad who was anxious to find his own kind of a job and start the struggle for a place in the world. There were jobs enough to go around, such as they were, but the good ones were not so plentiful as they would have been if business conditions had been more stable. Nevertheless, nearly every one who looked for work found it. The ENGINEER has made an effort to learn just what each man is doing now and it presents the information herewith. We will be glad to have further information about any member of this class.

CIVILS, 1922

Barnes, E. M., with Engstrom & Knapp, engineering contractors. Address: 419 Wheeling Steel Corporation Bldg., Wheeling, W. Va. At present he is working on a seven-story reinforced concrete warehouse. "Altho I did not expect to go into the building game," he writes, "I think that I have a very fine chance to pick up some very good practical experienced in reinforced concrete construction. The sooner I get some of that kind of experience, the better, I think. It is necessary on all kinds of work."

Birkenwald, Emil S., post graduate in architecture and structural steel, Mass. Inst. of Tech. Home address: 345 Prospect Ave., Milwaukee.

Brown, Hugh J. F., with the magazine "America at Work," St. Louis, Mo. Address: 816 Olive St.

Butler, J. R., home address: 114 Stimson St., Watertown, Wis.

Chase, Leon E., at present with the City Engineer, City Hall, La Crosse, Wis., writes as follows: "I have gained worth while experience and at least one impression—to-wit: city politics is something that the engineer should be a part of rather than be made its tool."

Christianson, Carl B., draftsman, American Bridge Co., Gary, Ind. Address: 448 Marshall St.

Collins, S. R., with E. B. Parsons, consulting engineer, Jefferson, Wis.

Douglas, Malcolm S., engineer with H. Smith & Son, contractors, Milwaukee, Wis.

Geilfuss, Marshall A., no information. Home address: 1002 Newhall St., Milwaukee, Wis.

Gruppe, A. H., no information. Home address: 47th and National Ave., Milwaukee, Wis.

Gude, Hans, motor trip to California. Now on surveying job. Address care of Miss T. Martens, 1797 Estrella Ave., Los Angeles, Cal.

Hanson, Paul E., with U. S. Geological Survey, Chattanooga, Tenn., 37 Municipal Bldg., Chattanooga, Tenn.

Hoe, G. M., Asst. Engr., City of West Bend, Wis. He gives his mailing address as 1116 Prospect, Milwaukee, Wis.

Johnson, J. W., with Corrugated Bar Co. Address: 34 Sanford St., Rye, N. Y.

Kessler, Lewis H., instructor in Hydraulics, University of Wisconsin.

Klement, Elmore F., in the designing and drafting department, Northwestern Mfg. Corp. Address: 107 Roberts St., Fort Atkinson, Wis.

Knollin, Albert J., Jr., on his father's farm. Address: Loma Vista Farms, Bethel, Kansas.

Livingston, Penn P., junior engineer, Water Resources Branch, U. S. G. S. Address: 735 McCallie Ave., Chattanooga, Tenn.

Moehlman, William F., with the Wisconsin Highway Commission, Room 12, First Nat'l Bank Bldg., Superior, Wis.

Moxon, Earl R., has taken a contract for the construction of a $2000 concrete bridge. Address: 902 Normal Ave., Stevens Point, Wis.

Newing, William B., is in the building department of the Wisconsin Telephone Co. Address: 89 Hamilton Pl., Fond du Lac, Wis.

Price, James R., engineer with Menominee & Marinette Lt. & Tr. Co. Address: 414 Ogden Ave., Menominee, Mich.

Radley, Harmon M., is in the building and maintenance department of the General Electric Co. Address: 2323 Broadway, Fort Wayne, Ind.

Reuter, Wm. R., with Milwaukee Sewerage Commission. Address: 821 17th St., Milwaukee, Wis.

Rohlfing, Anthony F., is with the S. M. Siesel, civil and construction engineer, Milwaukee. Address: 518 Reservoir Ave. "In all my job hunting, and I did a lot," he writes, "I found that the thing that counts is practical experience. I think, too, that the person who has practical experience and then goes to school gets more out of his work. * * * Wearing out sole leather, hunting for work, is rather disheartening at times, altho it also has its bright sides. For one thing you get to know quite a few people. Another advantage is that you lose a certain nervousness that rather embarrasses one at first. Last, but not least, it makes one appreciate a job after one lands one. * * * I play tennis with Newing and Yaeger off and on. Radley stopped over in Milwaukee on Thursday on his way to Fort Wayne. Bill Reuter is with the Sewerage Commission and I hear that Zelonky is with the Wisconsin Bridge Company. * * * It will seem good to get the Wisconsin Engineer for the only reminder I get from the old school is the monthly notice that my installment on the Memorial Union is due."

FRANK BUESE IS DESIGNING KNITTING MACHINES FOR THE BURSON HOSE COMPANY

Rolland, Sverre L., is with the Better Sox Knitting Mills at Ft. Atkinson, Wis. Address: 104 6th St., Ft. Atkinson, Wis.

Rove, Olaf N., taking graduate work in geology this year at Wisconsin.

Schneider, George R., no information. Home address: 1410 Etruria St., East Liverpool, Ohio.

Schubring, George F., no information. Address: 1003 N. Chicago Ave., South Milwaukee, Wis.

Shapiro, Leo H., spent the summer of 1922 working in the structural engineering department of the University Extension Division. He will continue to do part time work in the extension division and take graduate work this year.

Strong, Foster, is assistant hydro-electric engineer with the Utah Power and Light Co. at Oneida Station, Preston, Idaho.

Thiel, Walter C., assistant city engineer at Minot, N. D., under William F. (Bill) Gettleman, c '14, writes: "My work has ranged from one phase of municipal engineering to another with plenty of variety. The largest job I have had has been one of working out all details together with approximate cost of a proposed 300 foot concrete under crossing. The plans are now at the office of the chief engineer of the Great Northern Railway at Minneapolis. If passed upon by the Great Northern, construction will be carried out next year."

Varney, Forrest F., no information. Home address: Greenwood, Wis.

Wheaton, Herbert H., instructor of surveying in the Fresno State College. Address: 709 Normal Ave., Fresno, Cal.

Wheeler, Charles E., Jr., is back on the campus taking graduate work. He was awarded a scholarship in civil engineering for 1922-23.

Youngberg, Adolf F., is in the testing laboratory of the Wisconsin Highway Commission. His address is 615 N. Lake St., Madison, Wis.

Yaeger, Walter C. W., in plant department of the Wis-Telephone Co. Address: 700 Maryland Ave., Milwaukee, Wis.

Zelonky, Benjamin., Wisconsin Highway Commission. Address: 847 14th St., Milwaukee, Wis.

Zervas, Walter O., is in the commercial engineer's office, Wisconsin Telephone Co. Address: 2423 Cold Spring Ave., Milwaukee, Wis.

CHEMICALS, 1922

Abrams, Ralph B., is doing graduate work at M. I. T. Address: 5 Ivy St., Boston, Mass.

Amidor, George W., with the American Institute of Baking. Address: 1135 Fullerton Ave., Chicago, Ill.

Anderson, Gerald A., no information. Whitehall, Wis.

Beglinger, Richard T., cadet engineer with Allis Chalmers, at Milwaukee, Wis.

Bozarth, Roger A., no information. Home address: 1421 Clay St., Cedar Falls, Iowa.

Bulfer, Augustine J., no information. Home address: 2021 5th Ave., Peru, Ill.

Clark, Manley H., no information. Home address: Hanford, Wash.

Drew, Everett G., designer with the Western Structural Co., Moline, Ill.

Ebentier, Albert F., no information. Home address: Sutton, N. D.

Fong, Samuel T., is reported to be still in Madison.

Foote, Ferry A., with the American Appraisal Co., Milwaukee wis.

Golley, Frank B., with Dodge Bros. Address: Y. M. C. A., Detroit, Mich.

Harvey, Lyle C., with the Wm. A. Baehr organization, attached to the Shawnee Gas & Electric Co. Address: 317 Park St., Shawnee, Okla.

Hirshberg, Maurice A., no information. Address: 546 Kenwood Blvd., Milwaukee, Wis.

Hubbard, Honore C., has been awarded the Gas Association Fellowship at the University of Wisconsin. Address: 625 N. Frances St.

Huegel, Arthur J., temporarily in machine shop work in Milwaukee. Address: 654 Island Ave.

Kellet, Wm. R., touring Germany on a bicycle.

Kirst, Leland A., no information. Home address: Dodgeville, Wis.

Ledin, Theodore A., in the heat treating department of the Dodge Bros. plant at Detroit, Mich.

Meisekothen, Edwin E., is with the French Battery Co., Madison, Wis. Address: 448 W. Mifflin St.

Nason, Charles S., experimental engineer, City Ice Co. Address: 627 Huntington Road, Kansas City, Mo.

Neumeister, Carl L., is instructor in mechanics, University of Wisconsin.

Pekofsky, Philip, no information. Address: 699 7th St., Milwaukee, Wis.

Rau, Irving J., with the Western Electric Co. Address: 77 North St., Naperville, Ill.

Robertson, Martin R., no information. Address: Platteville, Wis.

Ryan, George P., with Forest Products Laboratory. Address: 507 State St., Madison, Wis.

Silverstone, Leon, no information. Address: 702 Germania St., Milwaukee, Wis.

Slichter, Donald C., has returned home after making a trip to California. Address: 636 N. Frances St., Madison, Wis.

Traub, Walter G., no information. Home address: 591 Oakland Ave., Milwaukee, Wis.

Wille, Clarence W., no information. Address: 947 4th St., Milwaukee, Wis.

ELECTRICALS, 1922

Andree, Clarence A., is on the campus again this year, having been awarded a Fellowship in Engineering.

Bader, Earl D., publicity department for the Universal Portland Cement Co. Address: 210 S. La Salle St., Chicago, Ill. "Am having a great time 'engineering' feature stories and propaganda of every description," he writes. "Have to do quite a bit of traveling and so far I have found my job and my associates very congenial. Would like to get in touch with Wisconsin men working in Chicago, especially in the 'Loop' as I have a proposition to make to the right man."

Baker, James S., in the testing department of the General Electric Co. Address: 20 Washington Ave., Schenectady, N. Y. "There are about 50 Wisconsin men here all told," he writes. "About 20 of us got together and went to a picnic on Sept. 9th under the direction of Glen Warren, m '19."

Barland, George C., at the Chicago Central Station Institute, Chicago, Ill. Address: 1515 W. Monroe St.

Bittner, Theopilus, no information. Address: 2129 Washington Blvd., Chicago, Ill.

Bjornson, Bjorn G., no information. Home address: P. O. Box 118, Reykjavic, Iceland.

Bowman, Phillip G., with the General Electric Co. Address: 20 Washington Ave., Schenectady, N. Y.

Bryn, Harold B., with the mechanical engineering department of the Extension Division, University of Wisconsin.

Christensen, Martin, with the Milwaukee El. Ry. & Lt. Co. Address: 544 1st Ave., Milwaukee, Wis.

Cotton, A. R., no information. Address: 488 31st Ave., Milwaukee, Wis.

Dewire, Donald S., at the Hawthorne Station of the Western Electric Co., Chicago, Ill.

Dick, Walter E., teaching at Ripon. Address: 652 S. Grove St., Ripon, Wis.

Dickinson, James G., with the M. E. R. & L. Co. Address: 718 Van Buren St., Milwaukee, Wis.

Feltman, Carl Howard, no information. Address: 401 W. Armstrong St., Peoria, Ill.

Garber, Leslie H., with the long lines division of the Am. T. & T. Co., Chicago, Ill.

Graves, Spencer F., no information. Address: 312 Ruder St., Wausau, Wis.

Guillemin, Ernst A., taking graduate work at M. I. T. Address: 5 Ivy St., Boston, Mass. He is rooming with Ralph B. Abrams. "I do not want to miss a single number of the Engineer," he writes. "I am just entering M. I. T. here with the object of doing some graduate work and perhaps getting a 'Master's' within a year or so. I looked up E. D. Bader and Ross Herrick in Chicago on my way down here and we had quite some 'gab fest.' Do you know whether there are any other '22 men in this vicinity?"

Heins, Rudolph J., in the testing department of the General Electric Co., at Schenectady, N. Y.

Herrick, Roswell H., with the Illinois Bell Telephone Co. at Chicago. Address: 156 N. Oak Park Ave., Oak Park, Ill. "Am looking forward to the old Engineer, believe me," he writes.

Hoff, Carl J. R., address: Christiana, Norway. King's Guard, military service.

Mornibrook, Francis C., at the Hawthorne Station of the Western Electric Co., Chicago, Ill.

Huntley, Harold R., with the Wisconsin Telephone Co. Address: 253 Juneau Ave., Milwaukee, Wis.

Kirk, Cecil H., with the Montana Power Co. at Great Falls, Mont.

Lallier, Wesley C., with the Wisconsin Telephone Co., Milwaukee, Wis.

Lamboley, Julian J., with the Illinois Bell Telephone Co. Address: 419 Webster Ave., Chicago, Ill.

Lanning, Brown C., no information. Address: Black River Falls, Wis.

Lehman, Donald G., with the Western Electric Co. Address: 463 West St., New York City.

Lee, Harold R., no information. Address: 1619 Lamborn Ave., Superior, Wis.

Loomis, Casey V., with the Anger Chevrolet Sales Co., 1103 Maryland Ave., Milwaukee, Wis.

Lord, George C., with the Westinghouse Electric and Mfg. Co., East Pittsburg, Pa.

Lunda, Ernest M., is with the Wisconsin Public Service Co. Address: 530 Goodelle St., Green Bay, Wis.

Magann, Joseph W., in the physics department of the University of Wisconsin.

Mansfield, H. Stanley, assistant examiner, Patent Office. Address: 1842 Calvert St., Washington, D. C.

Meyrick, Gordon S., with the Wisconsin Telephone Co., Milwaukee, Wis.

Mohr, Ernst J., with the Wm. A. Baehr organization, Chicago, Ill.

Moon, Parry H., with the Westinghouse Electric and Mfg. Co., East Pittsburg, Pa.

Norstedt, Einar A., no information. Address: 114 Catalpa St., Joliet, Ill.

Olson, Goldie R., with the Utah Power and Light Co. of Salt Lake City, Utah. Address: Grace Station, Grace, Idaho.

Oyster, Dalies J., at the Hawthorne Station of the Western Electric Co., Chicago, Ill.

Palmer, Gail W., research assistant in the agricultural department of the University of Wisconsin.

Parsons, Cecil P., with the Beloit Gas and Electric Co. Address: Y. M. C. A., Beloit, Wis.

Paulus, Raymond L., in the hydraulic testing department of the Allis-Chalmers Co. Address: 953 Island Ave., Milwaukee, Wis.

Prideaux, Gwilym F., with the Edison Lamp Works, Harrison, N. J. Address: 188 Grove St., Montclair, N. J.

Richardson, Claude I., no information. Address: 927 W. Dayton St., Madison, Wis.

Robar, Garret D., no information. Address: Aurelia, Ia.

Sharp, Howard M., no information. Address: Oconto Falls, Wis.

Staehle, Karl Arthur, in the engineering department of the National Lamp Works. Address: 1825 Charles Road, East Cleveland, O.

Svitavsky, Robert I., with the M. E. R. & L. Co., Milwaukee. Home address: 1613 Douglas Ave., Racine, Wis.

Taranger, Aksel, with the Western Electric Co. Address: 611 76th St., Brooklyn, N. Y.

Terry, Owen R., with Amer. Tel. & Tel. Co. Address: 311 W. Washington St., Chicago, Ill.

Trebus, Erwin H., with the Empire Oil Corp., Bartlesville, Okla.

M. S. E. E., 1922

Singer, Fred J., with the Am. T. & T. Co., at 195 Broadway, New York City.

Sorenson, Helmer, no information. Address: Whitefish Bay, Wis.

MECHANICALS, 1922

Auby, Lawrence C., with the W. A. Baehr organization attached to the Southern Ill. Lt. & Power Co. Address: 5254 Maple Ave., St. Louis, Mo.

Bethke, Raymond P., with the Lyon Metallic Co., Aurora, Ill.

Brinck, Arne, Bucyrus Co. Address: 2307 13th Ave., So. Milwaukee, Wis.

Bruce, Robert H., with W. A. Baehr organization attached to the Southern Illinois Lt. & Power Co., St. Louis, Mo.

Bruemmer, Carl W., with the American Appraisal Co. Address 793 12th Ave., Milwaukee, Wis.

Buese, Frank R., last year's manager of the Wisconsin Engineer is with the Burson Knitting Co., Rockford, Ill. His address is 504 N. Court St. "Expect to be at Homecoming," he writes. "To avoid disaster see that my October number of the Engineer gets here."

Cairns, Samuel B., taking a training course with the Bridgeport Brass Co. Address: University Club, Bridgeport, Conn.

Campbell, Claude W., with Continental Motors at at Muskegon, Mich.

Cox, Edward L., no information. Address: 137 N. Franklin St., Madison, Wis.

Cox, Irving K., no information. Address: 500 Greenbush St. Milwaukee, Wis.

Davies, Franklin C., teacher at St. Johns Military School, Salina, Kan.

Drewry, Montrose K., last year's editor of the Engineer, has entered a student course at the Allis-Chalmers plant. Address: 659 71st St., West Allis, Wis. He writes, "I ran across Paulus immediately, finding him perched high on one of those monster gas engine cylinders. My first job has been to assist in lining up a 100 k. w. turbine, a Falk reduction gear, and two centrifugal pumps."

Erbach, Frederick R., with the Nordberg Mfg. Co., Milwaukee, Wis. Address: 468 Herman St.

Erickson, Cyril L., instructor in engineering, Beloit College, Beloit, Wis.

Felber, Edward R., with the Madison Gas and Electric Co., Madison, Wis.

Giles, Merritt A., is an instructor in mechanics, University of Wisconsin.

Glenn, Truman G., with the General Electric Co. Address: 105 Front St., Schenectady, N. Y.

Greling, Winford W., with Continental Motors. Address: 223 Peck St., Muskegon, Mich.

Hanson, Earl P., sailed on Sept. 7th for Quiquicamata, Chili, where he will work in the nitrate fields with the Chili Exploration Co.

Henry, Edison E., with the W. A. Baehr organization as manager of the Wilson Ice. Co., Wilson, Okla. Address: Consumers Light and Power Co., Ardmore, Okla.

Huebner, Bernard W., with Western Electric Co. Address 4645 Roosevelt Road, Cicero, Ill.

Hunziker, Chester E., with the American Blower Co., Detroit, Mich. Address: Box 39, Hudson Falls, N. Y.

Karas, Leland L., with the Karas Electric Co., Chicago, Ill. Address: 5223 Lakewood Ave.

Kellogg, Rolland F., a student engineer with the General Electric Co. Address: 105 Front St., Schenectady, N. Y.

Kircher, Ralph N., is with West Bend Aluminum Co., West Bend, Wis.

Krotz, Alva S., Jr., draftsman with the General Motors Corp. at Dayton, Ohio. Address General Motors Research Club, Route 16, Dayton, Ohio. "I am certainly glad," he writes, "that I had a good course in mechanics. I'm a little sorry we were not instructed in graphical methods of finding section modulus and neutral axis of very irregular sections. Several of the men in the drafting room were trained in European universities and they seem to have mechanics and mathematics at their finger tips."

Longenecker, Ernst A., instructor in steam and gas, University of Wisconsin.

Love, Merrill D., with the Pacific Electric Railway at Watts, Los Angeles, Cal.

Maxfield, Terrell B., a student egineer with the General Electric Co. Address: 105 Front St., Schenectady, N. Y.

O'Connor, William D., farming at Hancock, Wis.

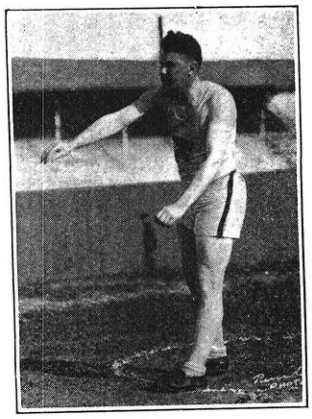
Phillips, Harry A., last year's editor of the Athletic Review of the Wisconsin Engineer, is with the W. A. Baehr organization, attached to the Adair County Light, Power and Ice Co. at Kirksville, Mo. Address: 411 E. Harrison St. "Every man I've met in this organization," says Hap, "is a regular fellow, and I should not hesitate to recommend it to any of the fellows who think they would like the work."

(Concluded on page 14)

ATHLETICS

L. T. SOGARD

Much like the last verse of a long hymn, the stars of field and track often go unsung. Meets are held too late for publication in the current Badger and the W's are awarded the next fall when all interests are centered on the gridiron. Plumbers who carry twenty or more credits are busy men, but, even so, a few of them have time to participate in athletics. Tommy Nichols is one of them. "Tarzan" and pride of the steam fitters, Nichols has wielded the hammer for Wisconsin with as much dexterity as he has pushed the slide-rule; the fact that he wears a W sweater with two Cardinal rings on his sleeve attests to that. His specifications are height, six feet; weight, 195 lbs. (with a build like a behemoth); mechanical engineer; senior. Nichols was a star in Milwaukee high school athletics, having scintillated in track and football at Washington High. Sixteen months overseas with the 107th engineers was not enough experience with engineering, so he came to Wisconsin for more.



THOMAS C. NICHOLS
Senior Mechanical

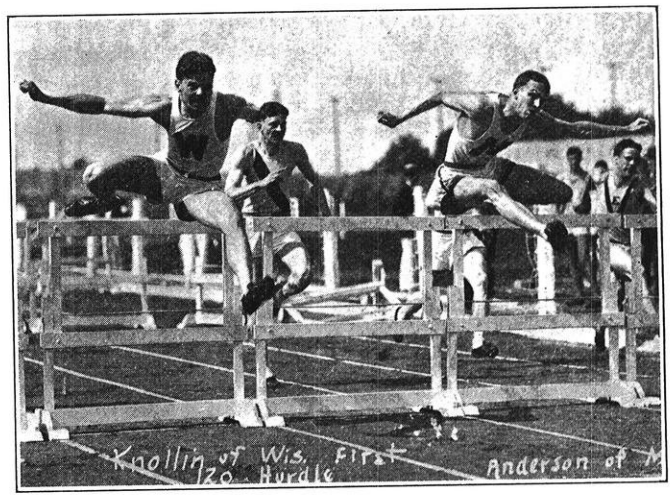
After a year with the frosh squad in 1920, Nichols was put on the Varsity in his sophomore year; he made his letter. Last year he again demonstrated his ability when he tossed the hammer for two seconds and a first in three dual meets. At Minnesota the distance was 125 ft., at Chicago, 133 ft. This fall Tommy is out for football and has been with the Varsity squad since the beginning. Early predictions favor him for center. He has weight, agility, and fears no man—and, besides, he is an engineer.

"220" Spetz is another of the plumbing clan who wears the track W. Spetz was one of the fastest men in the conference last spring. The way he left the cinder path behind him was a joy to followers of track and field and a despair to any opponents who aspired to see anything but his heels. He won every dual meet 220-yd. sprint and seldom failed to place in the century. He has been elected captain of the track team.

Al Knollin, civil engineer and captain of the 1922 track squad, was one of the most consistent point getters Wisconsin has ever had. He took the high hurdles so fast that it required three men to watch the process, one to yell, "Here he comes!", another, "Here he is!", and a third, "There he goes!" Knollin's chief performance last spring was the winning of the 120-yd. high hurdles in the All-Conference meet at Iowa City. He also placed fourth in the low hurdles. Al was graduated this year.

George Finkle, e '24, is back on his two feet once more and expects to be in a track suit by spring. Finkle, one of the best two-milers who ever circled a track, snapped his ankle at an indoor track meet at Notre Dame last March. All spring George stayed in bed with a cast on his ankle big enough in section to serve as a column. As a result the bone has knitted perfectly and by spring we hope to announce his latest time in the two mile.

James Woods, m '22, who wore the Cardinal on the grid for two years, is back this fall to help Richards with the coaching. As a side-line, Woods is instructing in machine shop.



KNOLLIN WINNING 120-YD. HIGH HURDLES AT ALL-CONFERENCE MEET AT IOWA CITY, MAY, 1922

1922 FOOTBALL SCHEDULE

Oct. 7—Carleton at Wisconsin.
Oct. 14—South Dakota at Wisconsin.
Oct. 21—Indiana at Wisconsin.
Nov. 4—Minnesota at Minnesota.
Nov. 11—Illinois at Wisconsin (Homecoming)
Nov. 18—Michigan at Michigan.
Nov. 25—Chicago at Chicago.

SELECTION OF DRAWING INSTRUMENTS

(Concluded from page 2)

made, after placing an extra needle point in the lead holder, by spreading the legs out at the head and bending them in at the knee until the points meet. If all joints work in the same plane the tips of the needle points will come together.

The needle point of the compass is held in some form of clamp socket. In some types of instruments the needle points are threaded which makes them easily adjustable for length. In others they are smooth and are simply held in the clamp socket by friction.

The lead holder should clamp the lead without pinching it at any point where is may break easily. The holder should be open at both ends so that in case the lead is broken it can readily be pushed out again.

The thickness of all clamping nuts or threaded bosses should be from 1/16 to 3/30 of an inch, depending somewhat on the diameter of the knurled nut or the head of the screw, to insure against stripping the thread in the nickle silver.

Most sets include a lengthening bar for extending the range of the compass. Some compasses are now furnished with two lengthening bars, thereby increasing the range to about 15 inches radius.

The construction of the divider differs from that of the compass in that each leg is made in one straight piece without a knee joint. In some cases the steel points of the dividers are rigidly fastened in the legs without the use of clamp screws thus giving trim lines to the instrument with nothing to obstruct the vision in setting off distances. In other cases the legs are tipped with replaceable needle points. The latter construction has the advantage that a damaged point can be replaced without loss of time and at small expense.

There are three distinctive patterns of compasses as based on the shape of the cross-section of the legs. These typical cross-sections are indicated at A, B, and C in Fig. 2. While several of the highest grade sets are made with the sharp cornered legs, many draftsmen now prefer the forms shown at A, and C, which are more pleasant to the touch and more easily kept clean because of their smooth rounded surfaces.

Spring Bows

Spring bow instruments fall into two classes on the basis of the kind of spring which holds the legs apart. In the older forms of bows the entire instrument is made from one piece of steel. The flat spring tending to hold the legs apart is incorporated in the leg (Fig. 3B). This form has the disadvantage that the steel will rust unless properly cared for and the tension of the spring grows weaker as the legs are spread. The circular or hook spring bow, Fig. 3 A, which is a later development, has the advantage that the legs and handle are made of nickle silver and that the pressure exerted by the spring is nearly uniform throughout the range of the instrument. In the flat spring style the dividers are usually made with rigid points whereas most of the hook spring bows have the advantage of replaceable points.

The bow instruments may be divided again on the basis of whether they have center or side adjusting screws, Fig. 3 A & B. Which of these two constructions is to be preferred is a moot question. There are advantages on both sides and the draftsman usually prefers the type to which he has become accustomed. The side screw instrument may be quickly adjusted by pinching the legs together with the left hand while spinning the nut with the forefinger of the right hand. To offset this feature the center screw bow has a right thread running in a swivel nut in one leg and a left thread running in a swivel nut in the other leg. This arrangement gives double the motion of a single thread. The rapidity of adjustment is still further increased by giving the screw a very steep pitch. With the center screw it is difficult to tell which way to turn the screw to spread the legs. Some makers have tried to overcome this objection by making one nut of polished steel and the other of blued steel so that by holding the instrument always the same way in the hand the draftsman can readily form a habit of turning the screw in the right direction to get the desired adjustment. When properly constructed there is no lost motion in the center screw bows where the screw engages the nut or where the nut has its bearing in the leg. In either type of bow instrument the legs should be stiff enough so that they will not spring in ordinary use.

Ruling Pens

The ruling pen is an instrument in which small variations of design or construction, scarcely apparent to the untrained eye, may affect considerably the ease of obtaining good results.

The nibs of any well made pen are set accurately opposite each other and are of exactly the same length. They should be sharpened until they will almost cut the tracing cloth or until the edge is so thin that when held up to the light no light will be reflected from the end of the nibs. In the best designs the blades are slightly curved in at the point to provide a pocket for holding a reasonable quantity of ink, Fig. 4. When the inside faces of the blades are parallel or nearly so the capillary attraction is likely to be so great at small openings that the ink will not feed readily. On the other hand if the blades are curved too much the capillary attraction will not be sufficient at large openings to support the column of ink. The shape of the nibs should be oval and wide enough to hold considerable ink, but not so wide as to make difficult the starting and stopping of lines at intersections without running by.

It is well to have at least two sizes of pens, one for light lines and one for heavy lines. For very heavy lines a detail or Swedish pen is convenient because the great breadth of the nibs and blades provides a large ink reservoir.

(Concluded on page 14)

THE SUMMER SURVEY CAMP OF 1922

(Continued from page 4)

first two weeks; the remainder "railroaded" for the second two weeks, doing the topographic work during the four weeks before and after their railway work. Others who had not taken the prerequisite courses for railway camp at school, took the topographic work for either four or six weeks, four required and two elective, with a credit per week towards graduation for the elective work.

With the railway gang, the student personnel numbered some seventy men, necessitating three men to a tent during the first two weeks. The camp was crowded to capacity, but the more the merrier. Jupiter Pluvius held off quite respectably till the camp was up, but not a bit longer. Friday night, the first night out, he cut loose and the campers experienced Rain # 1 of an innumerable summer series. About midnight every available hammer, axe, brick, and shoe was pounding something to secure the tents. Enough spikes, nails, and tacks were driven to hold a balloon in a cyclone.

Up at five and breakfast; the day's work began at six, lunch hour was from eleven to twelve, and at four-thirty everyone was back in camp—IF he quit in time to get there and didn't have to hike too far, or if Joe could get the motor boat started in less than 57 trial spins. Supper was at 5:15, leaving a long evening before dark for office work, baseball, or North Shore, where the social activity prevailed to a greater extent than it did in camp. We went by standard time with a daylight saving schedule.

At the end of the first two weeks, the railway gang departed, reducing our numbers to about thirty; with their departure, the remainder of us were able to yawn inside of our tents without danger of damage to someone's map, report, or best suit hanging from the ridgepole of the tent; no longer did Azimuth City resemble the crowded tenements of New York.

Then the dance, the annual Plumbers' Prom, an institution which is as much a part of the regular camp curriculum as topography or primary base-line measurement. This event is looked forward to with a great deal more anticipation than anything except, perhaps, breaking camp. Our own capitol, Maiers' Hall, was the scene of the season's social event and Saturday, July first, the date. Some of our Beau Brummels imported women, but the majority of the fair sex were Kappa Mu's (kitchen mechanics) from the neighboring Kirkland Hotel. The sardonical Louie Schmidt, editor of The Daily Outrage and other camp publications, hid behind the piano to watch the giddy swirl that he might better score the "cookie-pushers" in his Sunday Scandal Sheet. Mr. and Mrs. Ray and Mr. and Mrs. Van were listed as the chaperones, but they danced all of the dances and drank as much punch as their professorial dignities would allow. Couched in Schmidty's vernacular, "A good time was had by all." Some of the fair ones liked the place so well that they

(Concluded on page 20)

ALUMNI NOTES

H. K. VON KASS

CIVILS

Willard J. Seder, c '21, is with the McClintic-Marshall Co. at Pittsburg, Pa.

P. K. Schuyler, c '21, who is with the bridge department of the North Carolina Highway Commission, is author of an article on "Determination of Bridge Foundations by Wash Boring," which appears in the July number of the North Carolina Highway Bulletin.

Scranton H. Gregg, c '21, visited Madison recently. He is with Wallace and Tiernan Co., Inc., at 180 Market St., Chicago, Ill.

Karl C. Miller, c '21, is with the Corrugated Bar Company, in their Chicago office.

I. I. Rotter, c '21, has been with the Nordberg Manufacturing Company for the past six months, engaged in design work.

Henry M. Ford, c '21, who was with Bent Bros., in Los Angeles, has returned to Janesville, where he is associated with his father in the general contracting business.

Frederick W. Krez, c '21, is assistant engineer in charge of design for the Wisconsin Valley Improvement Co. at Wausau, Wis.

L. R. Sherburne, c '20, is acting as resident engineer on sewer construction at Huntingberg, Indiana.

M. C. Neel, c '20, was married to Miss Lucile M. Nichols of Des Moines, Iowa, on July 8, 1922. Mr. Neel is assistant engineer of the Metropolitan Utilities District of Omaha, Neb. He is at present working on a twelve unit 50 M. G. D. rapid filtration plant similar to the "Chain of Rocks" filter plant at St. Louis Mo. Prior to taking his present position, Neel had worked for the bridge departments of the Wisconsin and North Carolina Highway Commissions, and had worked on bridge construction in Iowa. His address is 5120 California St., Omaha.

Henry H. Gumprecht, c '18, resigned his position as instructor in hydraulic engineering at Wisconsin and is working for the Western States Gas & Electric Co. on the El Dorado project. His address is 126 Main St., Placerville, Cal.

Paul Huntzicker, c '19, has recently applied for membership in the A. S. C. E. He is at present with the Weiland Engineering Company and has spent considerable time on a survey and hydraulic calculation of the Arkansas River flood of 1921.

James A. Schad, C E '16, has resigned his position as assistant building engineer for the Industrial Commission of Wisconsin, and is district engineer for the Corrugated Bar Co. He is located in the Pioneer Building at St. Paul, Minn. He announces the birth of a daughter, Anne Carleton, on May 22, 1922.

L. C. Rockett, c '15, has changed his address from Green Bay, Wis., to 141 Lincoln Ave., Santa Fe, New Mexico.

W. F. Gettleman, c '14, is city engineer at Minot, North Dakota.

Robert Smith, c '13, is city engineer at Kenosha, Wis.

J. P. Bendt, c '12, has recently located in Cincinnati, O., where his address is 805 Neave Building.

L. J. Markwardt, c '12, engineer at the Forest Products Laboratory, Madison, spent part of September in Alaska, collecting timber for test purposes.

Harry D. Blake, c '11, announces the birth of a daughter on August 14.

Harry D. Blake, c '11, is author of Bulletin No. 13 of the Wisconsin Highway Commission on "Highway Location and Surveying." It is a 120-page booklet of pocket size. It outlines in detail the field methods used by the Wisconsin Commission.

H. E. Pulver, g '10, C E '11, assistant professor of civil and structural engineering, has recently published a book on "Materials of Construction."

J. Glaettli, c '09, was in charge of the construction of the Beaver Insurance Building, in Madison, and under his direction all previous records for construction in the city were broken. He is with the firm of J. R. and E. J. Law, architects.

The firm of McMullen & Pitz (**Arthur H. Pitz,** c '08), has the contract for reconstructing the approaches to the 17th St. bridge at Two Rivers, Wis.

Jack M. Smith, c '07, is in the civil engineering department of the School of Technology at Atlanta, Ga.

Anton B. Ziegweid, ex-c '05, is an attorney at law, in Chicago. His office is at 105 W. Monroe St.

William F. Tubesing, c '05, has the contract for the new section of concrete grand stand at Wisconsin, which will replace the stand destroyed by fire.

MECHANICALS

Burton E. James, m '21, a former member of the staff of the WISCONSIN ENGINEER, has completed his year of graduate work with the Westinghouse Electric and Manufacturing Co., at East Pittsburg, Pa., and has been assigned to the motor engineering department of that company. He made an excellent record for himself, and is ranked among the "half dozen ablest young men" who have entered the employ of that company within the last five years.

D. W. (Dave) McLenegan, m '21, is working on a new governor for large sized turbines, at the General Electric Co., at Schenectady.

Andrew B. Hawkins, m '21, has left the Valmora Sanatorium, and is now at U. S. A. Hospital 55, Fort Bayard, N. M.

E. S. Schrank, m '18, is acting as steam engineer for the Consolidated Water Power and Paper Co., of Wisconsin Rapids.

John M. Wood, m '17, is residing at 1213 E. 87th St., Cleveland, O.

ELECTRICALS

R. W. Brewer, e '21, who has been with the Mechanical Appliance Co. of Milwaukee, is with the Louis Allis Co. of the same city. His address is 133 Stewart St., Milwaukee.

Rudolph R. Knoerr, e '20, who has been connected with the Drexel Institute for some time, is assistant engineer in the turbine generator department of the General Elecric Co. at Lynn, Mass.

W. E. Blowney, e '20, has changed his address to 149 Glenwood Blvd., Schenectady, N. Y. He is working with the General Electric Company at that city.

W. R. McCann, E E '15, was elected president of the University of Wisconsin Club of New England, at Boston, Mass.

Vergil Poston, e '15, is operating engineer for the New York and Queens Light and Power Company. His address is Elmhurst, N. Y.

Mr. and Mrs. H. H. Force, e '10, announce the arrival of a daughter, Hazel Jeanette, on September 5, 1922.

Charles E. Starles, e '09, equipment engineer with Western Electric, spent several days in Madison last May interviewing seniors for the purpose of securing men for his company.

J. N. Cadby, e '03, EE '07, consulting engineer at Madison, has recently written an article on electricity on the farm, entitled "Let Dynamos do Our Drudgery," which was published in the Wisconsin Farmer on July 13, 1922. His home address is 1223 Sherman Ave., Madison, Wis.

Paul B. Turner, e '05, has a new son, Orren MacClure, born July 18.

CHEMICALS

Anthony W. Pesch, ch '21, is with the Madison Gas & Electric Company.

L. E. Buckingham, ch '21, is employed in the research Laboratories of the Carborundum Co. at Niagara Falls, N. Y. His home address is 207 N. Harrison St., Ludington, Mich.

Robert J. Zaumeyer, ch. '21, is with the Kimberly Clark Paper Co., at 446 Fourth St., Niagara Falls, N. Y.

Frederick G. Pope, ch '21, is with the Wisconsin Light, Heat and Power Company, as cadet engineer, at La Crosse, Wis.

Jennings B. Hamblen, ch '21, is with F. E. Kadelburg, Inc., at 801 Hudson St., Hoboken, N. J.

MINING

G. M. Lundberg, min '21, MS '22, is an instructor in Mechanics in the Texas A. and M. College, at College Station, Texas.

Stewart Turneaure, min '21, is taking a semester of post graduate work at Leland Stanford University.

A. T. Newell, min '15, is with the Morris Fertilizer Company at Navassa, N. C., and can be reached in care of that company.

MARRIAGES

E. W. Jones, min '23, was married to Miss Jennie Martin. The couple is now residing in Madison, where Jones is completing his senior year.

Howard G. Hymer, min '20, ME '21, was married to Miss Esther J. Warner of Chicago, Ill. They will be at home at Jerome, Ariz., where Mr. Hymer is with the Verde Consolidated.

Clarence A. Pottinger, e '18, was married on September 7 to Helen Eleanor Rundquist of Rockford, Ill. They will be at home after Dec. 1 at 120 Fairfield Ave., Rockford.

CLASS OF 1922

(Concluded from page 10)

Pidcoe, Weston W., a student apprentice in the power department, C., M. & St. P. Ry. shops, Milwaukee, Wis.

Powers, Milton A., with the Underwriters Laboratory, Chicago, Ill. Address: 1345 E. 53rd St., Chicago.

Rafeld, Ernest A., no information. Address: 840 Shawano Ave., Green Bay, Wis.

Richardson, Nels C., with the Armstrong Cork and Insulation Co., Chicago, Ill. Address: 320 W. Randolph St. "Best wishes for a good year for the Engineer in particular and everyone in general" is his greeting.

Richter, Charles F. R., with Chain Belt Co. Address: 477 Ivanhoe Place, Milwaukee, Wis.

Samp, Arthur M., is with the Northern Cold Storage Co. Address: 508 Cherry St., Green Bay, Wis.

Schaub, Reginald R., with the Wm. A. Baehr organization of of Chicago, Ill.

Schulz, Thomas N., Jr., was married right after graduation and took a motor trip west. Home address: Norway.

Siebken, Herman P., no information. Home address: Elkhart Lake, Wis.

Slezak, Gustav, is development engineer with the Western Electric Co. at Hawthorne, Ill. Mailing address: 2551 So. Trumbull Ave., Chicago, Ill.

Swift, John D., no information. Address: E. J. Swift, Portage, Wis.

Truman, Glenn, student engineer with the General Electric Co. Address: 105 Front St., Schenectady, N. Y.

Wallman, Otto F., with the Wisconsin Telephone Co. Address: 383 Albion St., Milwaukee, Wis.

Willis, Irving, no information. Addresss 626½ 6th St., Milwaukee, Wis.

Woods, James P., is an instructor in machine design, University of Wisconsin.

MINERS, 1922

Buckstaff, Sherwood, graduate student, University of Wisconsin.

Elstad, Edward M., furnace man, Bunker Hill and Sullivan Smelter, Bradley, Idaho.

Erickson, Robert, professor of mathematics at Wausau High School.

Gericke, Wesly O., fellow in mining engineering, University of Washington, Seattle, Wash.

Grieve, George C., research department, Anaconda Copper Mining Co., Anaconda, Mont.

Holmes, John B., mining engineer with Inspiration Copper Mining Co., in Arizona.

Jones, T. Delbert, assay department, American Smelting and Refining Co., Omaha, Neb. Address: 509 S. 31st St.

Kemler, Herbert J., geologist, Sinclair Oil & Gas Co., Tulsa, Okla.

Lundberg, Gustaf Maurice, no information. Home address: 1114 58th St., Superior, Wis.

Redin, Roy W., planning a venture into the manufacturing field. Address: 210 Gardiner Ave., Rockford, Ill.

Sickert, Otto L., touring Germany. After Nov. 1st will be metallurgist with Laddisch Drop Forge Co., Milwaukee. Address: 3212 McKinley Blvd., Milwaukee, Wis.

Uhlig, Wm. F., mining engineer, United Verde Copper Mining Co., Miami, Ariz.

Wolters, Herbert H., with Ray Consolidated Copper Mining Co., Ray, Ariz.

M. S. MINING, 1922

Hahn, Lawrence R., sales engineer, Sivyer Steel Co., Milwaukee, Wis.

Flom, Mervin O., designer of equipment, Mark Plant, Steel & Tube Co. of America, Indiana Harbor, Ind.

Lueck, Herbert J., student training course, Bethlehem Steel Co., East Bethlehem, Pa.

Knoll, Waldemar Arthur, underground superintendent, Steel & Tube Co., of America, Anvil Palms Mines, Ironwood, Mich.

Mann, Louis R., in foundry, Muskegon, Mich.

Tsao, Chen Kuch, fellow in mining engineering, University of Idaho, Moscow, Idaho. Address 106 South Van Buren St.

MARRIAGES

Erickson, Robert, M. S. min. '22, to Fanna Marie Carswell of Richland Center, Wis., on June 21, 1922.

Harvey, Lyle C., ch '22, to Miss Shumway, in August.

Lunda, Ernest M., e '22, to Goldie Estelle Davis, graduate of Milton College, 1921, at Janesville, on July 31, 1922.

Prideaux, G. F., e '22, to Amy G. White, Home Economics, 1917, at Mineral Point, Wis., on October 4, 1922.

Schulz, Thomas Nordberg, married immediately after graduation. No further information.

SELECTION OF DRAWING INSTRUMENTS

(Concluded from page 12)

The blade of the pen which is guided by the straight edge should be stiff enough to withstand the slight pressure of the pen against the ruling edge without reducing the spacing between the nibs. The spring in the opposite blade must be strong enough to hold the nib in any position determined by the adjusting screw. The steel of the blades is hardened at the nibs to resist wear. If too soft the nibs require frequent sharpening. If hardened until brittle the nibs are likely to be broken easily when screwed tightly together or by being dropped on the floor.

Many devices are placed on ruling pens for the purpose of allowing the blades to be spread for cleaning and closed again without disturbing the original setting of the pen. A few of these devices have real merit. Others are of doubtful utility as they fail to perform their most important function, namely that of allowing the nibs to return to exactly the original setting. A good pen without this feature is to be preferred to one of faulty construction.

All high grade pens are now provided with ebony or aluminum handles.

In making a purchase of this kind the student who is not familiar with drawing instruments will do well to buy a brand carrying the manufacturers' guarantee against defects of material and workmanship from a dealer permanently in the business of selling drawing instruments, who can be trusted to ask a fair price and through whose hands defective parts may be replaced.

CAMPUS NOTES

E. L. CALDWELL

Hello, Fellows; Fellows, hello,
The sight of all of you
Is the finest sight I know.
For three months past, these halls have been
Solemn and still; no clamorous din
Of unit stresses, entropy, or tests,
Has filled the sacred air.
Rooms where Mechanics always reigned,
Bore summer women audience.
Much did they chatter, but, saying naught,
Passed on, and little gave nor left,
To the bold ,fine spirit of the place.
But now You're back, and let there be,
Resumption of the wit and ribaldry
All of us love. The sight of all of you
Is the finest sight I know.
Hello, Fellows; Fellows, hello.

A FROSH LAMENT

"You can think and think and think,
Till your brains are numb;
I don't care what anyone says,
I can't do that sum."

Notice: On the ceiling of Room 222 there is a compression and shear layout which is very helpful when quizzes come, etc. Star gaze away, brother, and fool the prof to death. He's never known anything to be up there before.

A whale weighing three tons has a set of water wings of 1,000,000 cubic feet capacity. The water wings are made of perfectly elastic rubber. How fast must the whale travel before the heat developed increases his buoyancy enough to lift him from the water?

Mr. Lehman and Mr. Brecky were in charge of the Shop Exhibit at the State Fair in Milwaukee. The exhibit was composed of samples of work from all the courses. Mr. Lehman and Mr. Brecky state that they have not yet received their expense money. Bursar, please note.

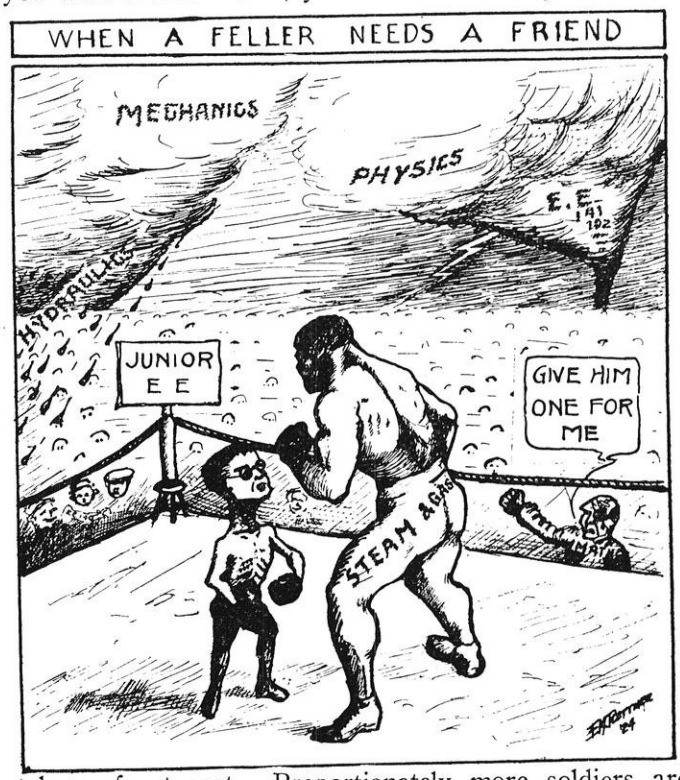
Mr. Hitchcock made a trip to Buflalo not long ago and purchased a number of small tools and measuring instruments.

Professor Dabney, on leave of absence because of illness, is at his home in Lexington, Virginia. He is expected back about December 1. Prof. Larson has general supervision of the Shops and Mr. Brecky is in immediate charge.

The Norton Grinder Company has made a present to the school of one of their latest type Universal Grinders—a splendid machine retailing at about $3,000. The machine was presented "in the interest of scientific grinding."

The action of the Norton Company is to be commended, and it is hoped that other manufacturers will take a similar attitude.

Remember how you used to take a back seat when you were a kid? Well, you aren't a kid any more, so



take a front seat. Proportionately more soldiers are killed a mile behind the line, than are killed on the firing line! Move up to the firing line! Get so close that the chalk gets into your eyes! Put your feet on the chalk rail, and when the prof derives a dizzy equation, he'll knock your feet off and wake you up! You'll be up there where things happen. Out of sight, out of mind The prof is human, so let him know you are there, physically at least. Move up front!

I know a guy who sold a log-log rule because it had no cube scale. Yes, a log-log rule because it had no cube scale. Now what dy'e think of that?

Permission to use the McCaffery System for the Treatment of Iron ore, which has been patented by Professor R. S. McCaffery, head of the Mining Department of this college, is being offered to French concerns through Brandon Freres, consulting engineers of Paris.

Toshihisa Sato, chief engineer of the South Manchuria Railway Company, visited the college in June for the purpose of investigating the equipment which the Structures Department uses in measuring bridge stresses under moving loads.

Dew: "I found out she wasn't only Slim's girl, though."

Hickey: "How's that? Did *you* kiss her?"

PATENT NUMBER $\sqrt{-1}$

A copper tube serving as a downspout for a roof. In particular, a copper tube acting in conjunction with, and sympathy for, an area undrained; in particular, a Frosh Hat.

BALDY, *Inventor,*
FROSH CLASS, *Assignees.*

After 22 years of service, the oak treads of the Grand stairway between the first and second floors had to be renewed this summer. The Notes fell downstairs a week ago. The new steps are so gosh-darned straight and slick that We, Us, and Co. couldn't navigate. Last year we could slide and roll down over the "edges" but this year the efficiency of the new steps has got us to using the side stairs. Watch your step!

Earl C. Hanson, senior electrical, who has been actively connected with the university wireless station for some time, has devised a crystal detector set arranged so that it can be plugged into an electric light socket, an arrangement which eliminates the aerial.

MINERS FIND PLENTY OF SUMMER JOBS

Following the Miners' trip to the West this year, the men, with Professor Shorey's assistance, scouted up jobs. Those who took permanent work are listed elsewhere in this issue. The following men took temporary positions with the expectation of returning to school in the fall:

John R. Mangold, F. H. Scadden, and W. W. Boley with the Tamarack & Custer Mining Co., at Wallace, Idaho; E. Kloser and C. H. Lorig with the Hercules Mining Co. at Burke, Idaho; O. B. Herbener, E. C. Wolters, and M. H. Hawkins with the Hecla Mining Co. at Burke, Idaho; M. H. Howes and C. F. Larson at the Morning Mine, and M. Gorrow at the Morning Mill of the Federal Mining & Smelting Co. at Mullan, Idaho; W. S. Field with the Utah Copper Co. at Salt Lake, Utah; J. F. Woschutz with the Bunker Hill & Sullivan Smelter at Bradley, Idaho; S. Buckstaff with the State Geological Survey at Madison, Wis.

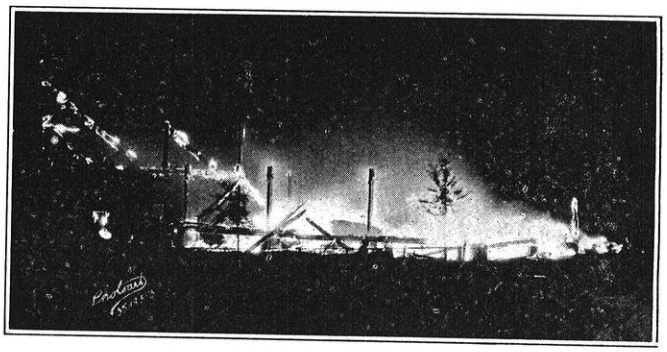
A small daughter, Esther Viola, arrived at the home of Professor O. A. Hougen on July 16.

Pat Hyland has a new girl. She is Mary Louise Hyland and was born on July 31st.

Gordon Beebe, T. E. instructor, is the father of a son born on May 21st.

E. Anderson, S. & G. instructor, announces the advent of John Robert, on Sept. 29.

During the night of June 8, the old covered grandstand that stood on the east side of the football field was burned to the ground. The origin of the fire is unknown. The loss was trifling, as the old structure had been condemned and was to be torn down. A contract was quickly closed with William F. Tubesing, a Milwaukee contractor and a graduate of the civil engineering course of this college, class of '05, for the



BURNING OF THE COVERED GRANDSTAND AT CAMP RANDALL, JUNE 8, 1922

construction of a section of concrete stand to replace the old one. A number of student engineers worked on the new stand during the summer.

The old stand was erected about the time that Camp Randall was first used as a football field in 1895. Its original position was where the barracks of the R. O. T. C. are at present located. When the new field was arranged in 1917, the stand was moved to the position it occupied when destroyed.

A paper on "Fatigue, or Progressive Failures of Metals under Repeated Stress," by H. F. Moore, J. B. Kommers, and T. M. Jasper, was presented at the twenty-fifth annual meeting of the American Society for Testing Materials which was held at Atlantic City in June. All three of the joint authors have at some time or other taught mechanics at Wisconsin, and Professor Kommers, who is a Wisconsin alumnus, is a member of the faculty at the present time.

What would happen to the Physics department if someone called a dyne an S. G. A. unit of force?

Poly: "What did you get out of Chemistry?"
Phase: "I got a 68 cent refund."

SHOW THIS ONE TO RAY

Student (submitting problem): "Have you a curve or chart by which you can check these results?"

Professor: "No. This is Structures 3, not T. E. 104."

FOR FUN ONLY

You all know that nifty feeling when you settle down in the hay at night? Then, when you go to sleep, you can't enjoy yourself any more! Take an alarm clock with you and get up and go to sleep every 30 minutes.

Steinmetz: (at the bowling alley.) "Did you see a red, three-fingered ball with a chip knocked off of one corner?" Steinie is a Senior Civil, too!

There was a man from Kent,
Whose eyes were slightly bent,
He never got near,
As he couldn't, my dear,
For instead of coming, he went.

DUMBBELLS IN THE ENGINEERING COLLEGE

So insensible to human understanding, that they think:

Balzac is a preferred mining stock.
Stone and Webster is a dictionary.
Allis-Chalmers is a movie queen.
The Marxian theory is a new handbook.
High speed steel has a definite r. p. m.
A car-ferry is a conductorette.
Pat Hyland wears kilties and plays a bagpipe.

SOME OF THEM HAVE A FINE LINE

L. & S. Prof. (after a long-winded dissertation): "Do you see the point?"

Engineer: "That isn't a point; that's a line!"

The new green lids look much more dignified than the old ones. But then it is an honor to wear one now —hence the dignity—But what is an honor?

Prof. J. F. Oesterle was married to Helen Shaffer at Altoona, Pa., on September 19, 1922.

During the first full week of school the U. S. Bureau of Mines gave their annual course in first aid and mine rescue work. All the miners who were eligible took the work offered.

Nearly all of the engineerng societies held meetings during the week of September. There were good turn-outs and speeches galore. Let's keep up the pep all year.

ENROLLMENT IN COLLEGE OF ENGINEERING 1922-23

Course	C. E.	M. E.	E. E.	Ch. E.	Min. E.	Tot.
Freshmen	65	51	96	48	11	271
2nd yr. Fresh.	21	13	19	12	5	70
Sophomores	75	73	96	32	13	289
Juniors	49	76	104	46	14	289
Seniors	43	58	75	44	15	235
Graduates	--	3	11	4	2	20
Totals	253	274	401	186	60	1174

The Notes announces a new series of honorary fraternities, to be known as the Chi series. Chi having C for a letter of introduction, we are letting Chi stand for CON. For instance we could then organize Chi Mu Beta, Chi meaning Con; Mu, by virtue of its M, meaning Mechanics, and Beta, being the second letter of the Math alphabet, standing for two. Chi Mu Beta would thus take in only those who have CONNED MECHANICS TWO.

The scheme is excellent because of its flexibility, there being 253 combinations, and thus room for 253 courses. A frat for every course—honorary, too,—What, Ho! 'tis now a merry life!

Nature abhors:
A vacuum.
Shiny noses.
Tea hounds.
Tame women.
Bad whisky.
No whisky.
Jazz.
Profiteers.
Long skirts.
Bow legs.
Knock knees.
Flat chests.
Bald heads.
Humorists.
Poor Nature!

FACULTY CHANGES

Fewer changes than usual are to be noted in the faculty roll, which includes 92 names. Nine men have left the staff and nine men have been added. The death of Professor Berggren, noted elsewhere in this issue, was the biggest loss of the summer. The new men are:

Edward N. Whitney, instructor in Highway Engineering, is a graduate of the civil engineering course of this college, class of '13. Since leaving school he has been on the engineering staff of the Wisconsin Highway Commission. His home is in Madison. He is also connected with the Extension Division and his time will be divided between this college and the Extension Division.

Clarence A. Willson, instructor in Structures, is a graduate of the civil engineering course of this college, class of '21. He has been working with Professors Hool and Kinne on the preparation of new books during the past year. His experience covers work with the Wisconsin Highway Commission, with Mead & Seastone, and with the University Extension.

Lewis H. Kessler, instructor in Hydraulics, is a graduate of the civil engineering course of this college, class of '22.

James P. Woods, instructor in Machine Design, is a graduate of the mechanical engineering course of this college, class of '22. During the summer he was with the Lyon Metallic Co. of Aurora, Ill.

"Jimmie," who was a back field man on the football team last year, will assist Coach Richards this fall.

Merritt A. Giles, instructor in Mechanics, is a graduate of the mechanical engineering course of this college, class of '22. He worked with the Lyon Metallic Co. of Aurora, Ill., during the summer.

Carl L. Neumeister, instructor in Mechanics, is a graduate of the chemical engineering course of this college, class of '22.

Guerdon H. Head, instructor in Mechanics, was graduated from the course in chemical engineering at Wisconsin, class of '21. He received the degree of Master of Science in '22.

Robert W. Warner, instructor in Electric Laboratory, received his A. B. degree from Washburn College, Topeka, Kansas, and a B. S. in electrical engineering from the University of Kansas in '18. He was with the Ordnance Dept., U. S. A., during 1918. A year was spent at Denver with the H. L. Doherty Co. as junior engineer in the results department. Following that he became assistant to the Chief Engineer of the Topeka Edison Co., Illinois Traction System, for two years. Last year he was instructor in electrical engineering at the University of Kansas.

Ernst A. Longenecker, instructor in Steam and Gas Engineering, is a graduate of the mechanical engineering course of this college, class of '22. His name appeared on last year's faculty list as an assistant in the machine shops.

Earl L. Caldwell, a junior in mechanical engineering, has been appointed assistant in the machine shops.

Julius M. McCoy, a junior in civil engineering, has been appointed assistant in Topographic Engineering.

The men who have left the teaching staff are:

Henry H. Gumprecht, instructor in Hydraulics, who is now working with the Western States Gas & Electric Co. at Placerville, Cal.

R. B. Alexander, instructor in Mechanics, who is with the Texas Highway Commission at Austin, Texas.

Fred J. Singer, instructor in Electrical Engineering, who is with A. T. & T. at 195 Broadway, New York.

A. O. Dahlberg, instructor in Machine Design, who is office manager in the Chicago office of the World Book Co. Address: 2126 Prairie Ave.

Henry W. Tabor, instructor in Mechanics, who is with the Southern California Edison Company and working on the hydraulic development of the San Joaquin River.

Martin Frisch, instructor in Mechanics, who is government sanitary inspector at Sault Ste Marie, Mich.

C. F. Sloan, instructor in Structures, who is with Engstrom & Knapp, engineers and contractors, at Wheeling, W. Va.

Herbert H. Wheaton, assistant in Topographic Engineering, who is instructor of Surveying, Fresno State College, Fresno, Cal.

Axel E. Berggren, assistant professor of Steam and Gas, who was killed in an automobile accident on August 10.

PHOTOGRAPHING ENGINEERING FRESHMEN

By Earl K. Loverud

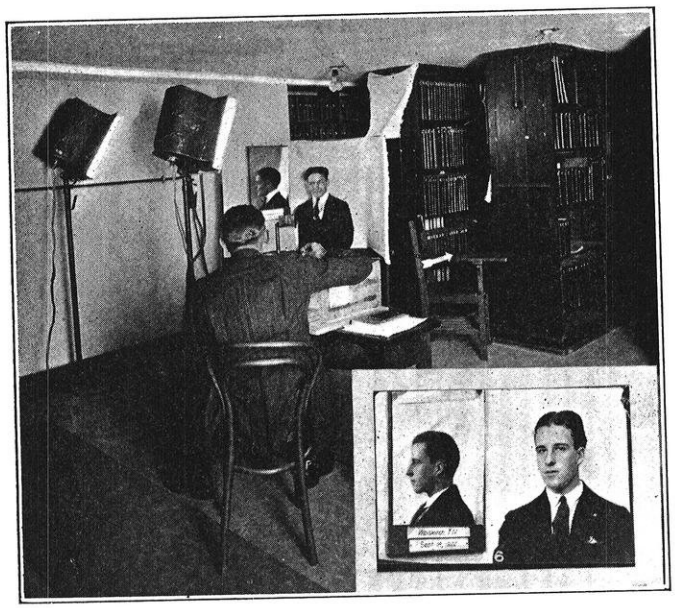
Senior Civil

During the registration period the mezzanine floor of the engineering library was equipped as a photograph studio, to which the incoming freshmen were escorted to sit for a snapshot as the final ceremony of their matriculation in the College of Engineering.

The apparatus is unusual, but simple in its arrangement. The registrant sits in a chair facing a camera. To his right is a mirror placed at such an angle that a side view is photographed with the front view. The name of the student and the date appear on printed slips beneath the mirror. Artificial lights and a white background assist in making the pictures clear. A film pack camera is used and two pictures are taken on each film. The pictures cost approximately eight cents each, not including the cost of the camera and the lights.

The photographs were taken at the rate of about one a minute. Three men in the "studio" photographed the students as fast as five instructors registered them.

The photographs are attached to the permanent record cards of the students, which are filed in the office of Prof. A. V. Millar, chairman of the freshman advisory committee. The purpose of the photos is not to accustom engineers to having their pictures taken for a rogue's gallery, nor to assist in identifying engineers who are overcome in Music 65, nor to help in finding some relation between facial features and engineering ability so that in the future a psychologist can be on deck at registration time to tell prospective



PHOTOGRAPHING FRESHMEN ENGINEERS FOR ADVISER'S RECORD. INSET SHOWS FINISHED PHOTO

students whether or not they would make good engineers. The purpose is to assist the marvelous memory of Prof. Millar, who makes it a point to know every student who enters the College of engineering,—and to remember him. With several hundred new students coming in each year, he finds it difficult to associate names and faces and, besides, he has other things to do, being chairman of the drawing department as well as assistant dean of the college. So he has devised this ingenious means of assisting him and other members of the faculty in more easily recalling the faces of students who might otherwise be remembered only by their class-room records.

EMPLOYMENT—AN ALUMNUS SPEAKS HIS HEART

Sir:—Have noted your article in *The Wisconsin Engineer,* March number, "The Kind of Man Employers Ask For," and I should like to add some remarks to it. Especially the large manufacturers I have found *aren't* willing to pay at all liberally for "the kind of men they are asking for," especially if he has "stuck" for a long time. When the college graduate starts out with his first concern he is usually started off at a low rate with the most beautiful promises. They'll pay more just as soon as you're worth it, but I hope you will tell the boys if they were the most willing workers, there's many a concern who wouldn't raise without asking if you stayed 20 years. Let me suggest this—if the firm doesn't recognize one's efforts in a year—then "get out" if times are good—'tis high time to hunt for a better job.

Let me tell you, confidentially, an instance. I started in with the F—— Co. at $55 a month—one year later, in summer of 1918, I was getting $60 per month. Board and room came up $14. I was refused a raise even though I had often done work Sundays which I asked nothing for as 'twas war time. I got a beautiful little talk from a member of the firm on the "wonderful experience" I was getting. I saw Prof. C——, who was good enough to come right out and say, "Oh, well, they are doing you then," and advised me to go elsewhere. I found more or less the same difficulty at X Motor Car Co. At Y Motor Co. conditions were better, but I did not find a satisfactory location until I accidentally went into the Z Engineering Laboratories, where, in spite of dull times, I was offered 20 per cent more than I got at Y, and, mind you, after I told them my exact rates at X and Y, an unheard of thing in my experience. Let me say I have gotten far more valuable experience than I have gotten in any other place. I am going to be very personal and tell you my rate of 90c per hour or $45 per week—it's no world beater by any means, but had I "stuck" at F—— since 1917 I'd be lucky to receive more than $100—about one-half of my present rate. As it is I'm in a growing industry. I expect it will be the next large industry in the future, —if so, I shall be on the "ground floor and not among the last of those in an old "cut and dried" one.

My advice is: "don't stay over a year with one concern at first unless the future there seems exceptional. Forget all these beautiful promises—they're invariably no good and never intend to be. "Success is *now*"—not 10 years in the dim distance. By changing often one has some basis of comparison of different firms,—also far more acquaintances. If times get dull, chances are far better for a job,—doubtless some of these many acquaintances can and will recommend one. If one has "stuck" in one place, who knows him?

May I ask for the benefit of those starting out from U. W. who have no one to advise them (for my father was not an engineer) you present a bit of *this* side of the employer question so that others may profit by my experience? Sincerely yours, WISCONSIN, '17.

(Concluded from page 6)

1900-1904—Served the machinist's apprenticeship and worked as journeyman until September, 1904.

1904-1908—Entered Iowa State College in September, 1904, graduating in Mechanical Engineering in 1908.

1908-1910—Taught at University of Colorado, 1908-1909 and 1909-1910.

1910-1917—Taught at University of Wisconsin, 1910, to September, 1917, as instructor, with the exception of one year, which was spent in commercial work.

Received the professional degree of Mechanical Engineer from the University of Wisconsin in 1914.

1917-1922—Assistant Professor of Steam and Gas Engineering at Wisconsin, in charge of Steam and Gas Laboratory.

1921—Married Helen O. Black on September 3.

1922—Lost his life in an automobile accident August 10.

Professor Berggren's summers were variously spent in shop, designing work and teaching as follows:

Summer of 1912—At Panama, as expert erector on canal gate valves.

Summer of 1913—Erecting engineer for Wisconsin State Capitol power plant.

Summers of 1914-1915—Research work at U. of W.

November, 1915, to June, 1916—Mechanical engineer for Faultless Rubber Company, Ashland, Ohio.

Summer of 1916—Engineer with American Blower Company of Detroit.

Summer of 1917—With Wisconsin State Power Plant Dept. as engineer on layout of new power plant at Wisconsin State Prison.

Summer of 1918—Teaching in Army Vocational School at University of Wisconsin.

Summers of 1919, 1920, 1921 and 1922—In charge of courses in thermodynamics and laboratory practice at University of Wisconsin.

THE NAVY'S RELATION TO COMMERCE AND INDUSTRY

(Concluded from page 3)

for the business of the world, they must be served by American ships. If they are served by the ships of other nations, our competitors, they must pay a toll to those foreign ships. If for a time, in spite of that, they are successful, we cannot complain if other nations who control the sea transportation of the world meet our success by taking advantage of such control to prevent our goods from moving about the world with the necessary precision as regards time, amount, and place. We *must* develop our own merchant marine. We *can* and *will* develop our own merchant marine.

The history of the world can be analyzed and resolved into a few fundamental principles. History invariably has repeated itself and will again. No nation has ever built up a seaborne trade and commerce unless the ships that served that trade were supported and secured by an adequate naval force.

Admiral Mahan in his two great books entitled, "The Influence of Seapower on History", and "The Influence of Seapower on the French Revolution and Empire", traces with matchless clarity the political and commercial development of the Europe we know today. Their contents are being applied by the statesmen of Europe. The history of the Japanese Empire in the past twenty-five years has been substantially guided and influenced by their existence. The principles adduced and analyzed are particularly applicable to our own country, a country that seeks wealth, prosperity, and consequent happiness, not by the sword, but rather by honest, industrious labor.

We in the United States have been accustomed to give little thought to our need for a merchant marine, or, if we have considered it at all, only as something seen dimly, in the distance. We have been accustomed to think of our Nevy as our strong right arm, as our bulwark in time of war, but as something in time of peace that was necessary, we supposed, but still required a heavy expenditure of the public funds that might be spent elsewhere to more apparent and immediate advantage.

We must revise our ideas; we must renew our perspective. The economic need for seapower is upon us, and by seapower I mean a fleet of American owned, American manned ships, running from the great commercial ports to the ends of the world and back, supported and secured by a Navy trained to the razor edge of efficiency and second in power to none other on earth.

Nothing is more important to the future interest of the United States than a thorough realization by the rising generation of the great influence seapower will inevitably exert on their prosperity and happiness.

THE 1922 SURVEYING CAMP

(Concluded from page 12 Adv.)

stayed over night and spent Sunday with us, much to the detriment of the office work—but, then, who wouldn't give up a Sunday to show his girl the sights of Devil's Lake, such as the triangulation stations, the current meter trolley, and our tin row boats?

Came the end of the fourth week and with it the "bankruptcy" of the A. B. & C. Ry. and the departure of the camp Gabriel, Kessler. Ah, thought we, no longer will we be rudely jerked from the arms of Morpheuc by a tin horn; but, alas, we were worse off than ever. For the first few mornings, Mr. Owen shattered the silence with his musically nasal tones in an endeavor to imitate a bugle, but the imitation was so poor that a bugle was purchased and put into the hands of the gusty George Reed who claimed that he, too, had bugled in the Navy. Judging by the noises emitted, it was decided that Reed must have been in the Swiss navy. As Bill Drips so well put it, "5 a. m. Big noise means get up." During the last two weeks there remained but twelve field parties, a mere remnant of the congregation assembled at the outset. The time was spent in feverish completion of field work, drafting, and reports.

Thursday morning, July 20th, the camp broke up. Belongings personal—and otherwise—were packed and hauled to the depot. The tents were pulled down and the floors piled away. In three hours the place presented much the same appearance that a vacant lot does the day after a circus. A few of the less fortunate hung around a day or two finishing up, but the majority shook the clay from their boots and departed on the eleven o'clock train for the land of bath-tubs, white table cloths, and cement sidewalks.