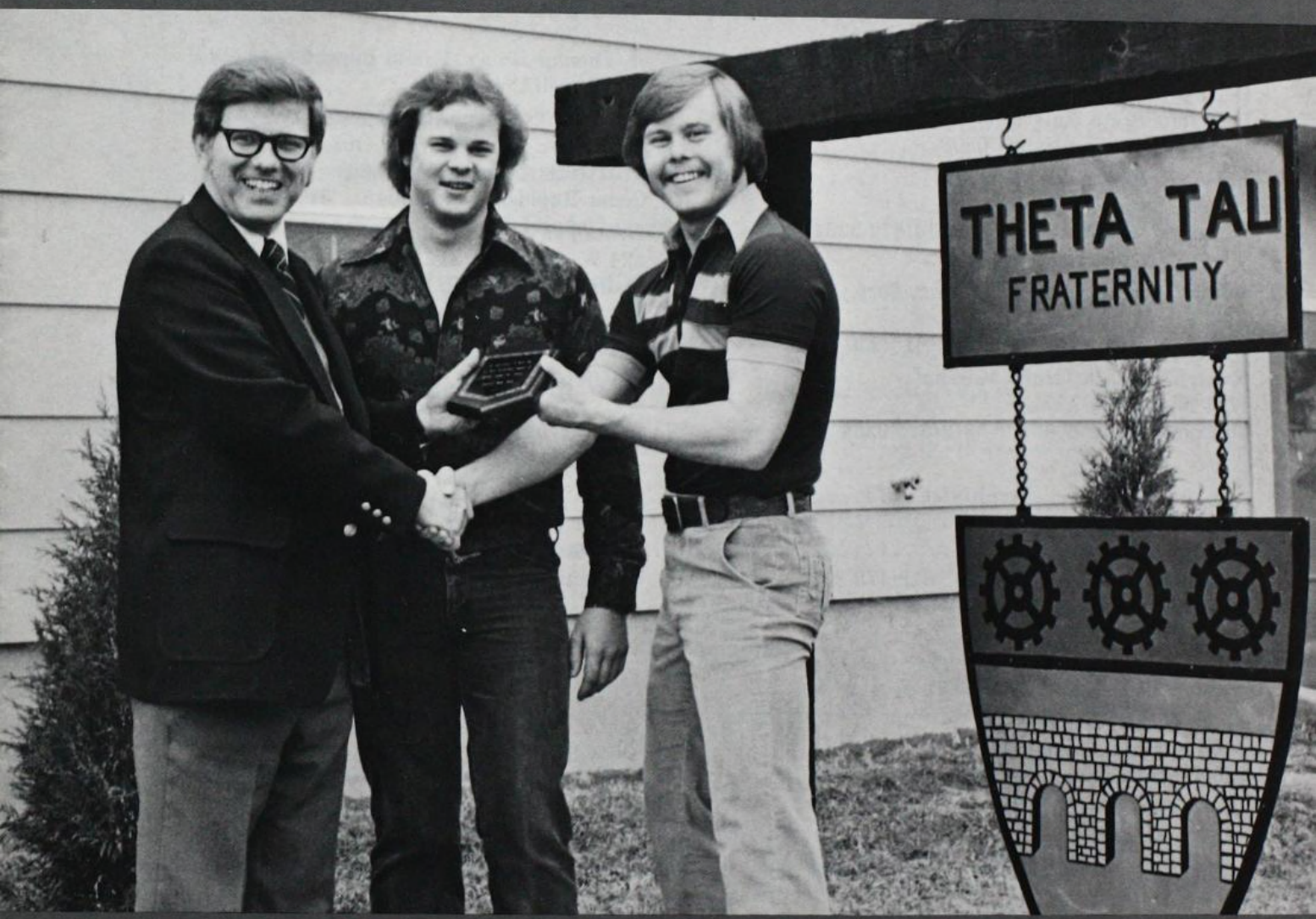
The GEAR of Theta Tau

Volume LXVII, No. 1

Fall, 1980



Omega Chapter Receives Award

Theta Tau Directory

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Richard A. Rummelhart, Editor
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Cover: Dr. Richard J. Gowen (left) Vice President and Dean of Engineering presents Past Regent Rodney Sudbeck, Ω, (right) with an award for outstanding participation in Engineer's Week '79. Organization was done by Julius Strid, Ω, (center).

The GEAR is the official publication of Theta Tau, National Engineering Fraternity and is published fall and spring. The magazine is an educational journal devoted to matters of Fraternity interest and is sent at no cost to alumni whose addresses are on record. Send change of address to 13 Sona Lane, St. Louis, Mo. 63141. The GEAR is printed by Compolith Graphics and Maury Boyd & Associates, Indianapolis, Indiana. Third class postage has been paid at Indianapolis, Indiana.

The Biennial Conventions: Our History

by Stephen J. Barth
Grand Regent

As I began to think of topics I could prepare to reflect on our 75th Diamond Anniversary Year, I wanted something different but yet historical. It occurred to me that the convention minutes contained our most accurate records of what we have done in the past 75 years. With this idea in mind I requested our Executive Secretary to forward all the past minutes to me. To my disappointment the first three conventions were not available from our Central Office. However, while on a trip to Alpha Chapter I was able to visit the archives and found copies of the first three conventions. The opportunity to read and see our history in the archives is in itself an experience I will not forget. To describe the feeling would be another article.

Our first convention was not held until February 23, 1911, in Minneapolis at Alpha Chapter. This was more than six years after our founding on October 15, 1904. In those early years the Society of Hammer and Tongs had gained two additional chapters, Beta and Gamma. The three chapters were well represented at the convention. The constitution, ritual, official badge and pledge pins were all adopted and approved at this convention. It was also at this convention that the changing of our fraternity's name to Theta Tau was presented. This proved to be the most controversial subject brought before the convention. Alpha Chapter was for the change 100% while Beta was not sure and Gamma was 100% against the change. It was decided that both sides would prepare documents following the convention on the pros and cons of the name change and a mail ballot would be taken. Sometime during the year following the convention a vote was taken and the Society of Hammer and Tongs officially became Theta Tau as we know it today. At the first convention the first two alumni associations had their charters approved. The first association being the Southwestern Alumni Association formed in 1909 and the second being the Chicago Alumni Association formed in 1910. On March 30, 1912 following the first convention the third alumni association, the Twin City Alumni Association, was granted a charter.

At the close of the convention Erich J. Schrader was elected our first Grand Regent. It was also noted that the total assets of our fraternity were $178.06.

The Second Biennial Convention was hosted by Beta Chapter in Houghton, Michigan on January 2, 1913. Since the first convention four additional chapters had been chartered, Theta Tau was growing. The convention itself was uneventful with most of the time spent on constitution revisions.

On December 29, 1915, the Third Biennial Convention was held in Cleveland, Ohio. Original plans had been to hold the convention in Berkeley, California but were changed due to the heavy financial burden it would have placed on the National Treasury, which boasted assets of $2090.00. One new charter had been granted since the last convention and our total membership had reached 700. The third convention produced several firsts. It was the first time a social event was incorporated into the convention, 55 men attended a theatre party, a field trip was made and at the closing banquet souvenirs were given which has continued as a custom to this day.

The convention approved dues for the national in the amount of $2.00 and the design of the sister pin was adopted and made part of the official jewelry.

During the next six years very little transpired at the conventions of historical significance. Chapters doubled from 8 to 16 and our membership grew to 2280.

In December 1923, Omicron Chapter was host to the Sixth Biennial Convention in Iowa City. It was the first convention where the Grand Regent used his authority to discipline a chapter and its members. Delta Chapter had departed so far from the ideals of the Fraternity that a two week visit by the Grand Regent was required to bring it back into line. As a result several members from Delta Chapter were expelled for conspiring to transfer the entire Delta Chapter and property into a general social fraternity.

The next six years again produced little historical material. Five new chapters were chartered and the charter of Xi Chapter was withdrawn. The lack of fraternity spirit and recognition of Theta Tau as well as no leadership were cited as the main reasons for withdrawing Xi's charter.

The Twelfth Biennial Convention, held in Kansas City in December in 1935, approved the establishment of Regional Conferences between conventions. Since that convention Regional Conferences have continued to be held in the off years between Biennial Conventions. This convention was also the first one to be named in honor of a member that had shown outstanding service to our Fraternity. Jamison Vawter was the member so honored.

By December 1937 when the Thirteenth Biennial Convention was held in Chicago the scars of the great depression were gone and membership was growing. Our fraternity boasted 6640 members with $9750 in assets. At that convention the Erich J. Schrader Trophy Award was approved to be presented to the outstanding chapter each biennium.

The Fifteenth Biennial Convention in December 1941 was to be the last convention until 1946. The Nation was at war, a war in which many of our members distinguished themselves and 79 gave their lives so we could continue to live in a free country.

December 1946 when the Sixteenth Biennial Convention convened in Louisville, Kentucky the main topic was quite different than had been expected. This convention saw the first attempt to remove the all white membership clause from the constitution. The State of New York had taken steps to eliminate racial prejudice in its state and Tau Chapter felt Theta Tau should take the same steps to continue progress. Psi Chapter also wanted to invite an international student from Africa to join but could not due to the white clause. The motion was defeated after much debate with Epsilon, Psi, Omega and Tau the only chapters voting for the change. Tau was able to get a motion through to have the Grand Regent appoint a committee to study the change. They were unable to get the convention to set a future date when the matter would be discussed.

The Seventeenth Biennial Convention held in Chicago December 29, 1948 proved to be a debating contest. Tau and Nu Chapters came prepared to fight the white membership clause. The convention opened with a report from the committee appointed following the last convention to study the membership requirement change. The committee recommended no change in the white membership requirement. Tau immediately placed a motion on the floor to delete the all white clause, Nu seconded. Throughout the debate that followed it could be seen how great an influence the older Executive Council members and alumni had on the student delegates. The motion was defeated 9 to 26. The charters of Xi and Omicron were reinstated at this convention. Omicron had lost all members during the war thus losing their charter.

National dues were also increased from $6.00 to $10.00 per year to provide $6000 per year as a salary for the new position of Traveling Secretary which was also approved by the convention.

The next two conventions made no mention of the white membership clause. The Twentieth Biennial Convention, 50th Anniversary did produce a startling report from three chapters. Theta, Xi and Epsilon reported they must remove the white membership clause by 1960 or lose university recognition. The membership change was again debated and defeated.

Our Fraternity had now been in existence 50 years and our membership was approaching 14,000. Our net worth was $77,950. Our fraternity had come a long ways in 50 years.

During the next four years the general mood of our fraternity was one of ease. No significant changes were made. However on December 28, 1958, the Twenty-second Biennial Convention after one full day of debate voted to remove the white membership clause from the Constitution. The motion passed with only 5 dissenting votes.

A dark day in our Fraternity occurred October 28, 1962 when Founder Number One, Brother Erich Julius Schrader departed to the Chapter Eternal. He had continually guided Theta Tau for fifty-eight years.

The Twenty-Fourth Biennial Convention established the office of Executive Secretary to handle the routine business and correspondence of our Fraternity and perform additional duties prescribed by the Executive Council. The office of Executive Secretary was offered to and accepted by the then Grand Scribe, Robert E. Pope. Arrangements were made for the establishment of a Central Office in the home of Brother Pope. Brother Pope has remained our Executive Secretary to this day.

Between 1960 and 1965, five new Chapters were installed and one was reinstalled. Membership was stable but expansion and growth were key issues during this time.

From the mid 60's to the mid 70's fraternities were on the decline. Theta Tau was no exception. However, three new chapters were installed during this time. Student membership per chapter did decline. The Twenty-Eighth Biennial Convention introduced what would prove to be our Fraternity's next controversial subject, the election of female candidates to membership in our fraternity.

At the Twenty-Ninth Biennial Convention the concern of women's membership eligibility was discussed in great detail. A poll was

made and it was apparent that to bring this matter to a vote on a convention floor would fail. An interim committee was formed to study this aspect and to report at the next convention.

The interim committee on women membership did a very impressive job and made a thorough report at the Thirtieth Biennial Convention. Their recommendation to remain exclusively a male organization was approved.

When the Thirty-First Biennial Convention was called to order the women eligibility was the number one concern. Title IX, aid to education, had been passed by Congress and professional fraternities had not been exempt from it. This meant membership must not be discriminatory. The best part of two days was spent debating the issue. It was finally decided to change the name of our Fraternity to Theta Tau Social Fraternity and to petition HEW for exemption from Title IX. Should the exemption be denied, the name would revert to Theta Tau and women made eligible for membership. The petition was later denied by HEW. The first women were initiated into our Fraternity October 15, 1977.

From this brief history it is evident that after 75 years of testing and trying Theta Tau has truly proven itself to be great.

In closing it is only fitting that the Grand Regents who have led us through our history be recognized.

Erich J. Schrader* 1904-19
George D. Louderback* 1919-25
J. Sidney Marine* 1925-27
Richard J. Russell* 1927-31
Fred Coffman* 1931-35
Herman H. Hopkins* 1935-37
John M. Daniels* 1937-39
Russell G. Glass 1939-46
Ralph W. Nusser 1946-48
Norman B. Ames* 1948-50
Donald D. Curtis* 1950-52
Jamison Vawter* 1952-54
A. Dexter Hinckley 1954-58
Charles W. Britzius 1958-62
William K. Rey 1962-66
C. Ramond Hanes 1966-68
Charles E. Wales 1968-72
George G. Dodd 1972-76
Stephen J. Barth 1976-Present

Directory Printed And Distributed

A monumental Diamond Anniversary Project was completed with the distribution in January, 1980, of the Theta Tau Directory. The Directory, issued in hard- and soft-cover editions, is the Fraternity's first since 1939. It was published without cost to the Fraternity by Bernard C. Harris Publishing Company, Inc., of White Plains, New York, specialists in fraternity and school directories.

The book's 441 pages are full of facts about the members and about the Fraternity. Every effort was made to obtain and include in the alphabetical section the business and residence addresses and phone numbers for every living member in good standing. These are listed again in the geographical section, an invaluable aid to anyone wishing to learn of members located in a given area. The chapter roll section includes, in numerical order, every member in good standing initiated by each chapter so that each member may be reminded of those who were initiated while he was a student member.

The Directory has been enthusiastically received by those who placed pre-publication orders with the publisher. A few additional copies from the publisher's overrun are still available, at moderate price, from the Central Office, 13 Sona Lane, St. Louis, MO 63141. The soft-cover edition may be obtained for $25, and hard-cover for $35, postpaid, while they last.

History Publication Imminent

The long-awaited History of Theta Tau, one of the projects honoring the Fraternity's Seventy-Fifth Anniversary, is now being printed and bound. Distribution is scheduled for this fall. Authored by Charles W. Britzius, Alpha '33, Past Grand Regent, with some collaboration from Grand Vice-Regent Eaton, and Grand Scribe Pope, this hard-bound volume represents the first assembly of historical facts in the Fraternity's 75-year history.

Copies of this book are reserved for all members who made significant financial contributions to the Fraternity during the last couple of years. These will be mailed just as soon as the first copies are received from the bindery.

Reading this fact-filled book is sure to give every member a sense of pride in his heritage as a member of this engineering fraternity, and sense of gratitude for the early members and others who have contributed to its progress over the years. Concisely and interestingly written, this book is sure to be much sought after by members of all ages.

The Ritual of Theta Tau

by H. C. Eaton, Grand Vice Regent

The customs and purposes of Theta Tau are to be seen in the daily conduct of the business of the Fraternity and in display of brotherhood among its members. This process is a dynamic one in which new ideas and concepts are continually tested and either rejected or retained for further test. Finally if the new, or by then old, idea is deemed valuable it may be formally written into the laws of Theta Tau.

This general process is the method by which our Ritual was first written and is rewritten today. The Ritual is the codification of all of these ideals and guides. To most it is viewed as a stark, red-covered volume kept by certain entrusted members and only consulted on occasion and never changed. In reality it is a complex of thought and deed which has changed—but only in a very deliberate way—many times during the seventy-five years of the Fraternity. It has become the measure by which the members conduct themselves as Theta Taus.

There have been three generally accepted versions of the Ritual. The detail to which the history of each of these is known varies from mere clues to countless pages of notes and convention minutes. Additionally, there is an available oral history from those brothers directly involved with the evolution of the document. The latter source is unfortunately transient.

Theta Tau began as the Society of Hammer and Tongs at the University of Minnesota. At the time of founding, which was in 1904, there was not another local engineering fraternity on that campus. Consequently, it may be safely assumed that the first ritual was not entirely an inherited one. It is quite likely, however, that the founders had prior knowledge of similar works.

It is not known if the first members were formally initiated according to a written script or simply informally accepted into the Brotherhood. The primary source of facts relating to this matter are the minutes of Alpha Chapter—then the only chapter. Mention is made in the first such book of the meeting of October 24, 1905. At that meeting Regent Erich J. Schrader appointed several members to the various committees of Society. Brothers W. Wheeler, E. Shrader, I. Hanks, and G. Weisel were selected to serve on the Ritual Committee. This is the earliest recorded reference to the need for a Ritual.

Any papers that may have been generated by that committee have been lost. Consequently, the thoughts of those men are not known. However, it is known that another group was appointed on March 3, 1906, to " . . . manufacture a 'high sign' . . . ". At the same time discussion was taking place regarding the installation of a second Society chapter at the Michigan College of Mines in Houghton. On March 31, 1906, the Executive Council of the Fraternity of Hammer and Tongs appointed Robert L. Downing, and Worth B. Andrews as delegates of the fraternity at large. They were students at the College of Mines and were authorized to initiate members of the Rhombohedron Club of that institute into the Society.

The Rhombohedron Club had a longer history than Theta Tau and had preserved many customs and ritualistic practices. It is quite possible, therefore, that some of the characteristics of that organization were incorporated in the early Theta Tau Ritual. Curiously two pages from the Alpha minutes are missing. Carefully cut from the book, they could possibly add a clue to this obscure part of the history. This is likely since the Brothers had been in the habit of destroying certain old documents—symbolic of their dedication to the new.

The impetus for this new Ritual came from a letter written to the chapters from the Southwest Alumni Association. At their Third Annual Meeting in Globe, Arizona, on December 24, 1909, it was moved and seconded that " . . . Brothers Schrader and Kumke draw up a letter to be addressed to the chapters giving the ideas brought out at this meeting in regard to ritualistic changes desired . . . ".

The new ritual was accepted at the First Convention of the Fraternity in Minneapolis, Minnesota, on February 23-25, 1911. Much of that edition is similar to the present version. All of the major parts are the same although noticably shorter. Additionally, all of the familiar signs and passwords are contained along with a distinctive whistle which was later dropped.

Our past Ritual contains revisions, corrections and additions to the second version. Added was the "Policy of the Fraternity" and "Instructions to the Regent."

Over the next seventy-five years of Theta Tau more changes will be incorporated. This is certain—predicted both by our history and the history of other fraternities. Another certainty is the fact that the Ritual is another common bond between the Theta Taus of today and yesterday. It is to be read, enjoyed, studied, and preserved. It is special for many reasons including the fact that it is only for members.

The second version had a special admonishment for those who did not revere its words:

" . . . Terrible may the penalties be should you reveal anything which has been or is about to be disclosed to you. May your days show you the contempt of your fellow men. May your nights be a torture and in your dreams may you feel your body torn asunder by the Tongs and your bones reduced to powder by the Hammer . . . " Today we recognize that although " . . . the secrets and signs are but little things in themselves . . . " they are a real part of our Fraternity.

Victorian Engineering—Still With Us

by Wm. J. Ellenberger, P.E.
Gamma Beta '30

Fifty years ago, the prescribed curriculum at my engineering school included a course in "Engineering Economics." Our professor made two significant statements that frequently come to mind: One is that in the solution of any engineering problem it's easy to put numbers against some of the inputs, but the test of your engineering ability is how you handle the "irreducible data," that to which numbers cannot be readily applied. The other, closely related to the first is the term "factor of safety" which could well be called "factor of ignorance." The latter term, "factor of safety," came to my mind frequently during my last trip to Great Britain during which I made a point of visiting and examining some outstanding works of Victorian Engineering. More than a dozen outstanding structures and machines immediately come to mind. What is significant is that with few exceptions they are still in use or in running order, undoubtedly because their designers built a large factor of safety (read "ignorance") into their designs. But this is not to disparage the accomplishments of I. K. Brunel, Robert Stephenson and their contemporaries.

My travels took me to bridges and viaducts of masonry and iron (both truss and suspension), tunnels, steam engines (hoisting, pumping and locomotion) and an ocean-going steamship. All are worth describing because they reveal the challenges of the time, the vision of the engineers and the dedicated efforts of the builders despite monumental obstacles. However, I will be selective and give a representative sampling.

Newcastle High Level Bridge and Royal Border Bridge—Robert Stephenson: The High Level Bridge over the Tyne (1849) is significant for two reasons: it was the last and greatest monument of cast iron bridge construction and the first to make use of Nasmyth's steam pile driver. The six 125-foot bow-string girders rest on five tall stone piers. The upper level carries three railroad tracks; the lower level roadway traffic. The total length including approaches is 1,873 feet. As I crossed the bridge in a modern diesel powered train I agreed with Rolt, the engineering historian, who said: "it must undoubtedly rank as the greatest and boldest civil engineering feat of the early Victorian era." Under construction at the same time, and completed a year later was the Royal Border Bridge over the Tweed at Berwick. Its 28 masonry arches each of 61 feet six inches span, and founded upon piles driven by the Nasmyth pile driver are visible from the train as it approaches the river crossing just before the Berwick station.

The Royal Albert Bridge—I. K. Brunel: Probably the most unique structure on the Great Western Railway is Brunel's bridge over the Tamar at Saltash. It was his last and greatest railway structure. He was dying as the bridge was opened for traffic and he did not live to see the completion of the Clifton Suspension Bridge. His design was predicated on a single mid-stream pier and two 465-foot fish-belly trusses for the main spans at the crossing point where the river is 1,100 feet wide. The mid-stream pier was built within a 35 foot diameter iron cylinder which was a cross between a caisson and a cofferdam, an example of Brunel's innovative skill in solving a difficult engineering problem. It is unfortunate that financial constraints limited the bridge to a single track. The bridge is so distinctive that it is identifiable in any picture. Since its opening in May 1859 the simple inscription "I. K. Brunel, Engineer, 1859" high on the tower arches proclaims the man and his work. Each time I passed over this bridge (20 mph speed limit) I thought of the vast infrastructure that was his professional output and on which he literally worked himself to death.

The Cornish Steam Engines: Throughout Cornwall are the remains of what was once the richest source of tin and copper in the world. As hoisting and pumping requirements increased with the depth of the mines, the Newcomen and Watt steam engines successively gave way to what was called the Cornish engine. It attained immense size and its use spread to all parts of Great Britian. One that I visited in Pool, Cornwall, has been preserved by The National Trust. It is a late example (1887) of a beam engine for hauling men and ore in a 1,500 foot inclined shaft. It is a double acting condensing engine of 30 inches diameter and nine-foot stroke operating usually at 10-12 rpm with steam at 40 psi. It ran quietly and economically; it would "do a day's hoisting on a few hundredweight of coal" and worked from 1887 until 1921. The men rode in a wheeled cage called a "gig" which could be changed quickly for a "skip" (ore box). As is typical of mine hoists the steel wire ropes on the winding drum were wound in opposite directions so that as one vehicle was lowered the other was raised lightening the load on the engine. Nevertheless, the engine beam (called a "bob" in Cornwall) might weigh as much as 50 tons necessitating large trunion bearings sup-

ported on massive masonry columns or the enginehouse walls.

Severn River Railway Tunnel—Hawkshaw, Walker and Richardson: Construction of the Severn Tunnel, 4.36 miles (7.02 km), was a 14-year saga of men against nature. It was placed in service in 1886 after repeated delays due to flooding and design changes to overcome unanticipated riverbed conditions. Now, almost a hundred years later, it is still the longest tunnel in Great Britain. THE GUINNESS BOOK OF RECORDS offers the interesting statistic that 76,400,000 bricks were used in its construction. Of greater interest to us are the permanent drainage works consisting of six 70-inch diameter Cornish beam pumping engines three of which continued in service until 1962 when they were replaced with electric submersible pumps.

The S. S. Great Britain—I. K. Brunel: In a lifetime of 53 years I. K. Brunel accomplished more than any of his contemporaries making him perhaps the outstanding engineering personality of the Industrial Revolution (1760-1860). It is hard to say which was his greatest engineering work, but the recovery and restoration of the S. S. Great Britain now under way through the efforts of an active preservation society are an indication of interest in this subject. When launched July 19, 1843, the ship was far larger than any other ship afloat. It was 322 feet long, 51 feet beam and displaced 3,443 tons. In addition to its size, it contained several innovations, one of which was the steam engine driven stern propeller. A model basin test of a scale model recently showed the quality and efficiency of the design proving that in addition to his other accomplishments Brunel was a superior naval architect. But for its wrought iron hull the ship would have long since disappeared. The hulk abandoned off the Falkland Islands was refloated and towed back to Bristol where, by a strange quirk of history 136 years later, it is being restored in the same graving dock where it was built.

Eastney Pumping Station—Portsmouth, Hampshire: Cities located on the littoral have a common problem; drainage of sanitary sewage almost without exception requires pumping for disposal. Portsmouth has been a strongly fortified seaport and naval station since the time of Henry VIII. It was not until 1864 that a system of sewers was started employing high level and low level main drains. Eastney Pumping Station was the first of more than a score of pumping stations for sanitary and storm drainage installed over the years to meet growth of the communities served. Eastney is now a museum showing the technological progress in development of main drainage machinery from early steam engines to gas engine driven, then electric motor driven, centrifugal pumps. In 1887, two James Watt pumping engines, each of six mgd capacity, were installed in a new pump house to replace two older engines of much smaller capacity. These pumps discharged to a large holding tank, then the effluent was flushed out to sea on the ebb tide. These two Watt engines remained in service for 68 years. On my second visit to Eastney one of the Watt engines (disconnected from the pump plungers) was being run for the benefit of visiting engineers. The running engine was almost silent and it was fascinating to watch the parallel motion and the beam with its various mechanical linkages. Steam was being applied at 95 psi (design called for 60 psi) and 15-18 inches of vacuum. The maker's plate says: "James Watt & Co./London & Soho Birmingham/1887/Late Boulton & Watt." A later wall plaque states: "City of Portsmouth/ Beam Engine House/2 compound condensing beam engines by Boulton & Watt driving 4 single acting plunger pumps speed 18/24 rpm, installed 1887, reconditioned 1926, capacity each engine 335,000 gal per hour." Note that the pumping capacity was increased one-third during the reconditioning. The cost of reconditioning was not stated in my information, but the two pumps, four boilers, and accessories, together with the building to house them, cost 17,310 pounds Sterling in 1887 making this a very economical pumping installation over its 68-year life.

CONVENTION SET FOR DECEMBER 27-30

The Thirty-Third Biennial Convention of Theta Tau will be held in Tuscaloosa, Alabama, with Mu Chapter as host. Registration will begin at midday on Saturday, December 27; the Convention Banquet will be Monday evening, December 29; and the final Convention Session is expected to adjourn at noon on Tuesday, December 30, 1980. Every member is encouraged to attend any or all of the Convention events.

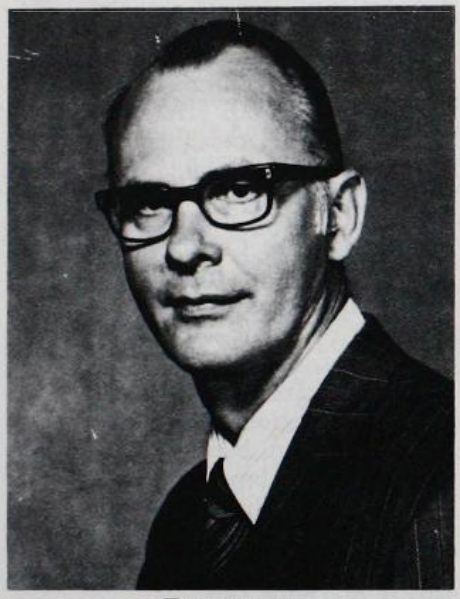
Detailed information on Convention schedule and events will be sent to all chapters and alumni organizations, and to alumni living in the Tuscaloosa area, when plans are complete. Other members may request that the Central Office add their names to the list of those to receive this information when it is distributed.

Attendance at the Convention provides a rare opportunity to experience the national character of the Fraternity; to become better acquainted with brothers from across the nation, including the national officers; and to participate in the decisions which will determine the future of Theta Tau.

The only other time the Theta Tau Convention was held in Tuscaloosa was in 1968. Southern hospitality, and the probability of comfortably pleasant winter weather in Alabama during Christmas week, should make attendance an especially enjoyable experience this year.

Grand Regent Barth to Preside

Fuerstenau, Freund, Gaylord Honored



Fuerstenau

Dr. Douglas W. Fuerstenau, Omega '49, professor of metallurgy and director of the Mineral Research and Resources Institute of the University of California, Berkeley, received the Guy E. March Silver Medal at the 99th Commencement Exercise of the South Dakota School of Mines and Technology, held on May 5, 1979. The award is presented annually by the School of Mines to one of its alumni for outstanding achievement in his/her chosen field.

Dr. Fuerstenau holds a master's degree from the Montana School of Mines and a doctorate degree from Massachusetts Institute of Technology, where he began his professional career as an assistant professor of metallurgy. Three years later he left MIT to become a section leader for the Metals Research Laboratories of the Union Carbide Corporation in Niagara Falls, NY. He later worked for Kaiser Aluminum and Chemical Corporation before joining the University of California in 1959.

Dr. Fuerstenau's main work has been in the area of mineral engineering, with a concentration on the recovery of metals from conventional ores and deep sea nodules. As a result of his research he has published over 160 technical papers.

Dr. Fuerstenau has devoted considerable time in committee service to professional societies such as the American Institute of Mining and Metallurgical Engineers and the American Institute of Chemical Engineers. He has served as Chairman of the Mineral Processing Division and as a member of the Board of Directors of the Society of Mining Engineers. He has been particularly active on Boards and Committees of the National Research Council, serving as a member of the National Board of Mineral Resources, as a member of the Committee on Mineral Technology, and as a member of the Committee on Marine Mining.

Dr. Fuerstenau has also been extensively involved in international programs. He is the American Member of the Scientific Committee of the International Mineral Processing Congress which is to be held shortly in Poland. In January, he participated in an International Symposium on World Resources in Bombay, India, and he has just returned from Korea, where he served as an adviser to the Director of the Korean Institute of Science and Technology. He is also actively involved in a bilateral technology exchange program between the United States and Egypt.

His numerous contributions to science and education and to government and businss have resulted in many honors and awards. Some of these include: the Robert Lansing Hardy Gold Medal, the Rossiter W. Raymond Award, the Antoine M. Gaudin Award, and the Robert H. Richards Award, all of the American Institute of Mining and Metallurgical Engineers. He has also received a Distinguished Teaching Award from the University of California.

Other honors which he has received include: election to the National Academy of Engineering, election of the status of Distinguished Member of the Society of Mining Engineers, and election to the Board of Directors of the Homestake Mining Company.

His citation for the Guy E. March Award reads:
"For his excellence as an educator, his extensive contributions to the field of mineral engineering, and his leadership, both at home and abroad, in assuring proper development and maximal utilization of mineral resources."

To recognize the 50th anniversary of their Cooperative Education Division, the American Society of Engineering Education has created the ASEE/CED major award, called the Clement J. Freund Award. This award will be presented annually to an individual in business, government, or education who has made a positive impact on cooperative education programs in engineering and engineering technology. The award is sponsored by the Cooperative Education Division of ASEE through an endowment from the following companies: Caterpillar Tractor, Danly Machine Corp., Deere & Company, Diamond Shamrock, Dow Chemical, Sundstrand and Union Carbide.

Freund

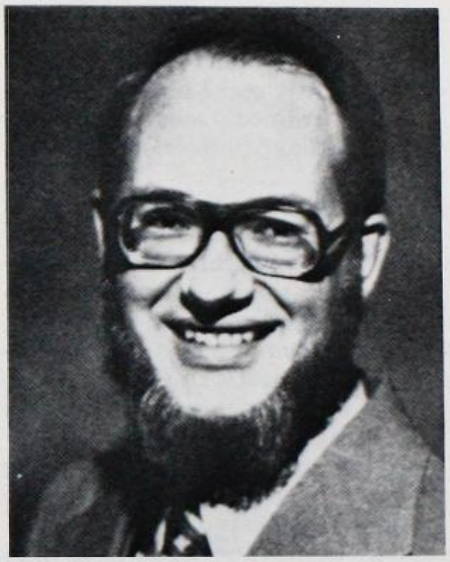
The Award has been named for *Clement J. Freund, Iota Beta '16,* dean emeritus of the College of Engineering and Science at the University of Detroit. Dean Freund who has been a pioneer in the field of cooperative education, will himself be the first recipient of the award. As a result of his chairmansip of an ASEE committee on aims and ideals of cooperative engineering education, a committee report entitled "The Cooperative System-A Manifesto" was written, which has long served as a model for cooperative education programs. Dean Freund has served on ASEE's Engineering Manpower Committee, the Committee on Cooperative Training of Foreign Students, and the Executive Committee on the Relations with Industry Division. Dean Freund has been a member of the Society since 1932 and served as president in 1948-49. The award citation accents his leadership in the "practice, development and philosophy of classical cooperative engineering education to a degree unsurpassed by any other individual."

Dean Freund was initiated into Theta Tau as an alumnus member of the Fraternity on the day that Iota Beta Chapter was installed. At that time he was Dean of Engineering at the University of Detroit. Dean Freund has received degrees from the following schools: AB, Campion College '16; ME, Marquette University '22; DSc (Hon.) Catholic University of America '61. In addition to being a member of Theta Tau he is also a member of Tau Beta Pi and Blue Key.

Dr. Thomas K. Gaylord, Iota '65, associate professor of electrical engineering at Georgia Institute of Technology, recently received the Curtis W. McGraw Research Award. The award is sponsored by the Engineering Research Council and McGraw-Hill Book Company. The award presented to young engineering college researchers recognizes outstanding early achievement in their academic careers.

Thomas Gaylord is known for his outstanding research in the areas of optics, data storage, and data processing. He has also worked with graduate students, in the development of new theoretical approaches and the construction of numerous unique laboratory instruments.

In additon to being a Theta Tau member Dr. Gaylord is a member of Sigma Pi Sigma, Eta Kappa Nu. and Tau Beta Pi.



Gaylord

Great Success Describes New Nashville Alumni Club

Opportunities rarely occur for brothers to renew old friendships, share stories about their days as pledges and actives or to make new friends of brothers from other chapters. On November 13th, twenty brothers met at the Capitol Club in downtown Nashville to do just that. It marked the beginning of the Middle Tennessee Alumni Club.

Some of the goals of the organization are:

- To provide career opportunities to students
- To help improve housing for chapters in the area
- To assist in the formation of new student chapters
- To provide scholarships for worthy students
- To help in the formation of other alumni clubs
- To participate in civic projects

Election of officers and the creation of the constitution and by-laws will be the business of the next meeting. Informal meetings are planned for the first Thursday of each month with formal business meetings held quarterly. For information concerning the next meeting contact:

J. Steve Dozier
1900 First American Center
Nashville, TN 37236
615-259-2670

If other brothers are interested in forming an alumni club, the first step is to contact Bob Pope at 13 Sona Lane, Saint Louis, Missouri 63141 (314-872-3234), who will be glad to compile a list of the brothers who live in your area. The Middle Tennessee Club will be happy to provide any additional assistance required.

Professional Development of Engineers

By John W. Catledge Kappa Beta '75
(From THE MILITARY ENGINEER, No. 455, copyright,
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A calculator and a handbook do not instantly make an engineer; he must be trained. One way of doing this is through professional development.

A complete, yet not too detailed, description of professionalism concerns itself with three major categories: educational excellence, personal completeness, and ethics.

Educational excellence includes not only scholastic training, but also that which must be obtained as a practicing engineer. Educational excellence requires not only mastering and retaining the basics, but also remaining abreast of current technological advances. The critical cost-effective nature of the problems facing engineers today requires that they have available all tools to solve problems efficiently, economically, and safely. An even greater emphasis on sound academic basics is required by the pioneering nature of some of these problems. How do we harness the energy of the sun, the atom, or the ocean currents? How do we retrofit years of industrial technology to protect the ecology? At the rate technology is advancing, educational excellence is a necessity.

Yet no matter how well educated engineers are or how valuable their contributions are to mankind, if they are unable to communicate with their employers and peers, then there is no real contribution made. This ability to communicate is one of the many skills required for *personal completeness.* Also, in order to perform their tasks effectively, engineers must be able to work with professionals in other disciplines or departments. Those who cannot accept responsibility for their tasks will be undesirable to their employers and the profession. Finally, a certain amount of leadership ability will almost inevitably be required for full realization of engineering potential. Each of these qualities must be learned largely outside of a classroom—which is why it is important to recognize personal completeness as an essential part of professionalism.

Ethics is an integral part of professionalism, the other parts being useless without it. The critical nature of engineering requires high, unswerving ethical standards as does the daily performance of engineering tasks. Engineers are regularly faced with ethical questions in dealing with people during the process of bidding and letting contracts. For this reason, many organizations publish guidelines for engineers' ethical conduct in relation to their employers, peers, business associates, and the public. These criteria hopefully serve to counteract the natural social pressures to do what is most profitable rather than what is ethically proper. What many persons fail to realize is that frequent unethical business practices, although commonly accepted, may backfire and cause damage. Without ethics, educational excellence and personal development are useless words and service to mankind is an artificial thought.

Professionalism is not a cloak which may be bought at the store and worn to work each day. Its very nature requires that it be developed or learned slowly and additively. Large responsibilities are difficult to handle until the ability to cope with smaller ones is developed. Poor ethical standards practiced as a child are difficult to modify later. Consequently, by the time a person has become a practicing engineer, the best time to begin professional development is years past. Every college engineering student should be at least offered a course in professionalism. Many colleges already offer such selections in their curricula.

College is a veritable professionalism school. Besides providing the basics to an engineer's education, it offers unlimited opportunities to become actively involved in engineering societies, fraternities, and student government. Active participation in engineering societies is still an excellent way to develop personal skills. Young leaders quickly find that the motivation and leadership of voluntary organizations are extremely challenging. For most, personal ethical standards are tested away from home for the first time. Unfortunately, while neglecting other areas of development, many students aim too hard for the grade, and forget that the grades in the future will be indicated not by a report card, but by advancement in their careers. Practicing engineers have the same opportunities to develop professionally. Their continued educational excellence is attained through additional schooling, experience, and reading books and magazines.

Another way to develop professionally is to be aware of the word "professionalism" and what it means. Usually unprofessionalism results from weakness in one or two of its three areas. Poor ethical standards lead to the improper application of academic excellence, society's pressures lead to a de-emphasis of personal completeness, and poor budgeting of time does not allow for additional work on educational excellence. An awareness of professionalism would reveal those weak areas requiring more work.

This effort to convey the substance of professionalism is evidence of my personal acceptance of this challenge. But I do rely on someone else. From scripture, God is seen to be the Great Physician. It is not difficult to denote the Creator and Maintainer of this universe as also the Great Engineer. And these are His orders to all men: "And God said unto them, 'Be fruitful, and multiply, and replenish the earth, and subdue it; and have dominion over the fish of the sea, and over the fowl of the air, and over every living thing that moveth upon the earth.' "

Remember Theta Tau in your will

There are many of us who cherish our membership in Theta Tau as we recall our initiation into a Chapter, our college life as we became good friends with our Brothers, and later our association as alumni with many of them in social relationships and in professional activities. Many of us will want to make possible the perpetuation of Theta Tau for the benefit of future generations. This we are doing with regular gifts to the National Fraternity. There is an opportunity to help to do more and in the future by remembering Theta Tau in your will. The following are suggested as methods to accomplish this purpose.

GIFT FORMS

1. I bequeath the sum of $_____ to Theta Tau Fraternity, for its use and benefit.

OR

2. I bequeath _____% of the residue of my estate to Theta Tau Fraternity.

OR

3. I bequeath all of the rest, residue and remainder of my estate, whether now owned by me or hereafter acquired, to Theta Tau Fraternity.

The Executive Council is presently studying the feasibility of an Annuity Program that would when offered provide a convenient vehicle for the support of Theta Tau during one's lifetime.

ALPHA
Sam R. Hamilton, '28, 11/16/78

BETA
Robert A. Angst, '33, 8/13/78
William A. Beck, '22, 1/17/78
Thomas C. Bennett, '39, 7/21/77
Alphonse J. Ceglarek, '29, 12/2/77
Norman D. Hanson, '22, 3/6/76
Edgar C. Wallace, '36, 1/7/78

GAMMA
Howard F. Keller, '24, 11/77
Ernest B. Keyt, '27, 10/73
Rene J. Mechin, '19, 8/26/78
Orville O. Shott, '37, 3/8/78
Paul A. Grant, '23, 5/8/71

DELTA
George L. Troppman, '10, 7/61
Raymond J. Wilcox, '23, 3/71

EPSILON
Sydney E. Fraser '18
Paul C. Perry, Jr., '25, 10/10/78
John F. Wight, Jr., '48
James T. Wilson, '35, 5/25/78

ZETA
James L. Barron, '23, 9/5/78
Marshall A. Guy, '31
Wallace M. James, '25, 9/23/78
William S. McLeod, '24, 9/23/78
Earl T. Newcomer, '15, 1/23/78
Howard D. Patterson, '23, 7/3/78
Ralph G. Stillinger '29, 9/24/77
James D. Stokes '28, 1/28/78

ETA
Norwood P. Johnston, '21
Howard H. McClintic, '19, 1/78
Wingate Rollins, '19, 3/9/78

THETA
Robert T. Brown, '33, 3/10/78
George F. Coope, '14
Thornton Davis, '19, 12/7/69
Darwin J. Pope, '23, 7/26/77
Thomas P. Quilty '35, 2/18/67

IOTA
Harold R. Kilpatrick, '28, 11/8/78
Joe Williamson, Jr., '29, 9/21/78

KAPPA
Kenneth B. Bush, '16
Roy L. Peck, '17, 8/28/78
Glenn B. Shutts, '24, 6/29/72

LAMBDA
Russell B. Hodgson, '25

MU
Edward R. Coulbourn, '23, 7/15/78
William G. Reynolds, '37, 11/15/78

NU
George W. Bickerstaff, '48
Harold W. Jefferson, '27, 7/2/78
Paul F. Maurer, '22, 2/1/78
Frederick H. Meng, '33, 8/9/62
Henry C. Westin, '33, 7/3/76

XI
Clyde J. Koskinan, '24
William E. Schubert, '25, 69

OMICRON
Donald J. Fitzpatrick, '54
Terrance J. O'Brien, '50
James F. Phillips, '22, 2/5/73
James L. Stober, '33, 4/17/78
Don L. Thomas, '28, 7/78

PI
Richard W. Talley, '34
Maitland A. Wilson, '24

RHO
Banks H. Bell, '30, 3/6/78
Joseph C. Richert, Jr., '24, 4/25/78
Mark Sumner, '26, 8/30/78

SIGMA
Williams L. Anderson, '25, 11/11/78

TAU
William H. Adams, '30
Lewis J. Bizik, '28, 11/73
Charles A. Gilmour, '32
Ehrman S. Reynolds, '26, 8/11/78
George R. Schultz, '48, 7/23/77

UPSILON
Rolfe C. Eldridge, '37, 11/4/77
Henry H. Lewis, '33, 2/77
William B. Stelzner, '07, 10/8/77

PHI
Leo R. Maisel, '45, 10/77

CHI
Percy E. Coe, '37
Robert D. Nordstrom, '53, 11/3/77

OMEGA
Burton F. Beiler, '32, 1/15/78
John P. Bingham, '37, 10/2/75
Harold C. Foster, '37, 2/7/74
Howard K. Hause, '43, 10/16/73
Francis J. Majerus, '50, 1/21/75
Bertram A. Mulcahy, '36, 9/26/78
Fred L. Paddock, '32, 7/16/78
Charles E. Stutenroth, Jr., '27, 10/71
Eugene F. Thurston, '49, 12/23/75

GAMMA BETA
Merwyn N. McKnight, '41, 3/5/75

DELTA BETA
Wilbur P. Adams, '42, 9/10/78
Irvin L. Johnson, '50, 1/10/78

Additions to Membership

BETA CHAPTER

1130 Daniel P. Fallon, '80, Southfield, MI
1131 Steven Broslavick, '79, Gaastra, MI
1132 Robert W. Geist, '80, Grosse Ile, MI
1133 Jeffery R. Holland, '80, Iron Mountain, MI
1134 Jay P. Andreini, '79, South Range, MI
1135 Frank E. Kling, Jr., '82, Livingston, New Jersey
1136 Ernest J. Sesselmann, Jr., '81, Muskegon, MI
1137 Bernard A. Kruszka, Jr., '81, Saginaw, MI
1138 Salvatore LaFace, '82, Elizabeth, New Jersey
1139 Richard O. Cristan, '81, Iron Mountain, MI
1140 John A. Fontecchio, '81, Iron Mountain, MI
1141 James W. Petroff, '81, Iron Mountain, MI
1142 Steven L. Clark, '81, Flint, MI
1143 Gregory A. Stone, '81, Elkhart, IN
1144 Gregory J. Guidos, '81, Flint, MI
1145 Kevin M. Belhumeur, '81, Iron Mountain, MI

GAMMA CHAPTER

1249 David W. Kapple, '79, Plano, IL
1250 David L. Willie, '79, Manitou Springs, CO
1251 Alan C. Harrison, '79, El Paso, TX
1252 Robert P. Shiba, '79, Cheyenne, WY
1253 Robbin J. Vinnola, '79, Golden, CO
1254 DeeEarl Vaden, '79, Denver, CO
1256 James A. Ricotta, '80, Denver, CO
1257 Gary M. Lacy, '78, Littleton, CO

DELTA CHAPTER

1207 Ronald A. Ray, '79, Parma, OH
1208 Charles B. Belt III, '81, St. Louis, MO
1209 Raymond L. Billig, '79, Wickliffe, OH
1210 Jacqueline A. Kershaw, '81, Galion, OH
1211 Mary Jane Kozak, '79, No. Tonawanda, NY
1212 Charles M. Rischar, '80, Columbiana, OH
1213 Evan S. Spero, '78, Cleveland Heights, OH
1214 Jeffrey D. Thayer, '81, Girard, PA
1215 Richard G. Russell, Jr., '81, Monongahela, PA
1216 Theodore M. Bryson, '81, Verona, PA
1217 Karl P. Lagerlof, '79, Sweden
1218 Marc P. Kelemen, '81, Warren, OH
1219 Kathleen A. Buran, '80, Endwell, NY
1220 Dorothy E. Pandelios, '81, Weirton, W. VA
1221 Laurie A. Swansiger, '80, New Springfield, OH
1222 Dale Mikol, '79, Parma, OH
1223 David K. Peterson, '81, Columbus, OH
1224 Charles M. Cherry, '82, Albion, PA
1225 Scott A. Witzke, '80, Seven Hills, OH
1226 Janet E. Bishop, '82, Lakewood, OH
1227 Gail L. Fenton, '81, Winterthur, DE
1228 John C. Gibbons, '81, Parma, OH
1229 Eric D. Kessler, '81, Langhorne, PA
1230 Walter A. Kuhn, '81, N. Syracuse, NY
1231 Patricia A. Overmyer, '81, Fremont, OH
1232 Judith A. Sandford, '81, Tarpon Springs, FL
1233 Kevin M. Sivey, '80, Alliance, OH
1234 William D. Williams, '81, Mentor, OH

ZETA CHAPTER

784 John C. Cygiel, '81, Kansas City, KS
785 John S. Ramsey, '84, Garland, KS
786 Gert H. Berthold, '84, Lawrence, KS
787 Stephen W. Koontz, '82, Kansas City, KS
788 Linn A. Wiley, '82, Bonner Springs, KS
789 Robert C. Dees, '82, Derby, KS

MU CHAPTER

1082 Roderick D. McKenzie, Jr., '80, Montrose, AL
1083 Randall L. Patton, '82, Birmingham, AL
1084 Robert C. Tinsley, Jr., '82, Pell City, AL
1085 Gordon Crocker, '80, Marion, AL
1086 George S. Sledge, '80, Tuscaloosa, AL
1087 Gary M. Boyd, '81, Huntsville, AL
1088 Joseph B. Chambers, '81, Dayton, AL
1089 Richard W. Gelbarth, '82, Drexel Hill, PA
1090 Jeffrey E. Owen, '83, Northport, AL
1091 Praveen Patiyasevi, '80, Thailand
1092 Matthew L. Self, '81, Bessemer, AL
1093 Frederick O. Stanley, '80, Birmingham, AL
1094 David R. Wegener, '81, Birmingham, AL
1095 Kenneth W. Bell, '80, Northport, AL
1096 John S. Segner, '80, Memphis, TN

XI CHAPTER

457 Jeffrey E. Foran, '80, Milwaukee, WI

OMICRON CHAPTER

885 John P. Annett, '82, Arlington Hts., IL
886 Dennis A. Connolly, '80, Cedar Rapids, IA
887 Jorge A. del Carpio, '81, La Paz, Bolivia
888 Beth E. McCracken, '80, Allison, IA
889 Laura J. Miller, '80, Iowa City, IA
890 Ricky J. Noble, '82, West Liberty, IA
891 Jacqueline A. Spaulding, '82, Iowa City, IA
892 Philip E. Vincent, '81, Iowa City, IA
893 Sheryl L. Mottet, '81, Dryersville, IA
894 Earl D. Eyman, Iowa City, IA; Honorary
895 John P. Robinson, Iowa City, IA; Honorary

RHO CHAPTER

904 Janette Annunziata, '82, Pleasant Valley, NY
905 Steven M. Hauser, '81, Winston Salem, NC
906 William W. Rogers, '81, Raleigh, NC
907 Clarence T. Taylor, '82, Rocky Mount, NC
908 Roger D. Bowman, '82, Durham, NC
909 Paul R. Dengler, '81, Conover, NC
910 Harvey P. Eure, '81, Gates, NC
911 Robert W. Faires, III, '82, Cherryville, NC
912 Glenn M. Medford, '81, Waynesville, NC
913 Richard V. Stokley, '82, Wilmington, NC

TAU CHAPTER

768 Willard E. Lape, III, '80, Syracuse, NY
769 James A. Callen, III, '82, N. Syracuse, NY
770 Michael T. Gallant, '80, Chittenango, NY
771 Richard J. Krajewski, '82, Fairview, NJ
772 Paul F. McLaughlin, '82, Revere, MA
773 Edward G. Axelsen, '79, Poughkeepsie, NY
774 James W. Davis, '80, E. Syracuse, NY
775 Michelle L. Achorn, '82, Minetto, NY

UPSILON CHAPTER

856 Gregory R. Hirsch, '80, Milwaukee, WI
857 Clifton P. Hinze, '81, Benton, AR
858 Kenneth W. Evans, '81, Benton, AR
859 Martin R. Theriault, '81, Waxahachie, TX
860 John E. Jehlen, '81, Pine Bluff, AR
861 William R. Green, '81, Lonoke, AR
862 Michael J. Marlow, '81, N. Little Rock, AR

863 Christopher M. Tanner, '81, Malvern, AR
864 Ronald D. Pedersen, '83, Bentonville, AR
865 Randall M. Small, '82, Conway, AR
866 Donnie J. Daws, '82, Camden, AR
867 Richard K. Patrick, '82, Fayetteville, AR
868 Morse C. Craig, Jr., '81, Bentonville, AR

PHI CHAPTER

552 Donald J. Schlueter, '53, W. Lafayette, IN; Honorary
553 William J. Burns, '82, Indianapolis, IN
554 Robert H. Daniel, '80, Park Ridge, IL
555 Peter J. Davis, '81, Auburn, NY
556 Wayne S. Gaafar, '81, W. Lafayette, IN
557 Thomas V. Jurss, '81, Warsaw, IN
558 Gary N. O'Donnell, '82, Crawfordsville, IN
559 Stephen M. Radspinner, '82, Indianapolis, IN
560 Ross W. Stevens, '81, Huntington, IN
561 Richard B. Willison, '81, Westfield, NJ
562 Thomas C. Clinger, '82, Rochester, IN
563 Andrew F. Schaeffer, '82, Germantown, OH
564 Joseph T. Sendek, '82, Baden, PA
565 Michael T. Cumbea, '82, Huntington, WV
566 David S. Drajeske, '83, Munster, IN
567 John B. Gustafson, '82, Mequon, WI
568 Michael P. Plonski, '80, Brooklyn, NY
569 John G. Sites, '83, Webster Groves, MO
870 Thomas R. Smoot, '83, Bedford, IN
871 Scott F. Spearing, '82, Indianapolis, IN
872 Scott A. Tausk, '82, Western Springs, IL
873 Steven W. Tomlinson, '82, Rochester, MI
874 Michael A. Whitley, '82, Indianapolis, IN

CHI CHAPTER

850 Alec S. Bass, '81, Tucson, AZ
851 Kamal K. Masand, '80, India
852 Yong Chu McHenry, '81, Tucson, AZ
853 Bryan J. Smith, '81, Ann Arbor, MI
854 Steven S. Seigrist, '79, Tucson, AZ
855 Cathy E. Chambers Walker, '80, Tucson, AZ
856 Lester B. Wolf, '80, Tucson, AZ
857 Steven R. Schmidt, '79, Tucson, AZ
858 Daniel A. Bilezikian, '80, Boston, MA
859 Rinaldo Di Cenzo, Jr., '80, Tucson, AZ
860 Tracy J. Lancaster, '80, Lusk, WY
861 Kelly Rehm, '81, Tucson, AZ
862 Dana R. Weick, '80, Tucson, AZ
863 Daniel L. Bass, '81, Tucson, AZ
864 Bruce E. Duysen, '82, Council Bluffs, IA
865 Katherine M. Waddell, '82, Tucson, AZ
866 Robert L. B. Watson, '83, Tucson, AZ

PSI CHAPTER

593 Michael E. Ellis, '80, Spokane, WA
594 Harry E. Flynn, '79, Ft. Benton, MT
595 Timothy C. Lechner, '78, Billings, MT
596 Gregory L. LeClaire, '80, Missoula, MT
597 Larry C. MacKenzie, 78, Miles City, MT
598 Randel R. McLain, '79, Portage, MI
599 Mark J. McRae, '79, Fairfield, MT
600 Christopher J. Murphy, '79, Billings, MT
601 Jeff L. Schweitzer, '79, Rudyard, MT
602 Jaye T. Pickarts, '82, Colorado Springs, CO
603 Jeffrey M. Wallace, '80, Spokane, WA
604 Earl J. Dodd, '81, Twin Bridges, MT
605 Mark J. Johnson, '81, Havre, MT
606 Martin G. Kadillak, '80, Butte, MT
607 Michael B. Kadillak, '78, Butte, MT
608 Daniel D. Kirkpatrick, '80, Livingston, MT
609 Michael J. Leary, '80, Butte, MT
610 Micki L. McCaslin, '79, Ronan, MT
611 Erik E. Sirs, '79, Tacoma, WA
612 Ryan R. Tremblay, '79, Butte, MT
613 Michael J. McRae, '82, Fairfield, MT
614 Michael E. Farmer, '82, Ft. Walton, FL
615 Kittridge M. Dale, '82, Twin Bridges, MT
616 Andrew A. McCrea, '82, Las Vegas, NE
617 John J. Mehlhoff, '82, Garrison, ND
618 Richard M. Hotaling, '82, Great Falls, MT

OMEGA CHAPTER

842 Terry G. Bowman, '82, Jeffrey Ct., WY
843 Alan A. Foglesong, '82, Tulare, SD
844 Kelly W. Kober, '80, Rapid City, SD
845 Mark L. Koepke, '82, Watertown, SD
846 Matt E. Kraft, '82, Wessington, SD
847 Kurtis L. O'Bryan, '82, Kyle, SD
848 David L. Olson, '82, Piedmont, SD
849 Gregory W. Schwenk, '81, Yankton, SD
850 Michael S. Sherrill, '82, Watertown, SD
851 Loren D. Vrem, '81, Dickinson, ND

ETA BETA CHAPTER

248 Agustin A. DeRojas, '81, Houston, TX
249 Eric Eichelman, '81, Houston, TX
250 Peter C. Goudeau, Jr., '80, Liberty, TX
251 Preston J. Julian, Jr., '80, Houston, TX
252 Michael W. Mason, '80, Houston, TX
253 Mark E. Rizzo, '82, Spring, TX
254 Robert V. Ruiz, Jr., '83, Houston, TX
255 John T. Evans, '84, Rosemead, CA
256 Jose A. Lara, '84, Harlingen, TX
257 Eugene E. LeCompte, Jr., '81, Alvin, TX
258 Emilio Luna, III, '82, Houston, TX
259 Jerry W. Sanders, '84, Houston, TX
260 John P. Trevino, '83, Houston, TX
261 Danny L. Watkins, '83, Galveston, TX
262 Christopher C. Webber, '80, Houston, TX
263 Keith A. Wells, '82, Houston, TX
264 Michael L. Winfrey, '84, Houston, TX
265 Rodney D. Whitmire, '80, Houston, TX

IOTA BETA CHAPTER

193 Willy S. Rengiil, '80, Koror, Palau Micronesia

KAPPA BETA CHAPTER

295 Sarah L. Daniel, '80, Saulsbury, TN
296 Gregory C. Martin, '81, Jayess, MS
297 Robert T. Prisock, '82, Jackson, MS
298 Peter J. Reho, '82, Pass Christian, MS
299 Randy A. Roebuck, '81, Jackson, MS
300 Wallace S. Watson, Jr., '83, Brandon, MS
301 Timothy C. Allred, '82, McComb, MS
302 Richard A. Campbell, '82, Clarksdale, MS
303 Craig A. Nelson, '82, Moss Point, MS
304 Philip E. Prather, '82, Clinton, MS

LAMBDA BETA

193 Charles C. Parker, '80, Dandridge, TN

MU BETA CHAPTER

172 Kevin M. Dougan, '79, Garden City, MI
173 Jack E. Tubbs, '80, Applegate, MI
174 David A. Wass, '80, Grand Rapids, MI
175 Bruce W. Cummings, '83, Bedford, IN
176 Bradley J. Duggan, '81, Pontiac, MI
177 Timothy M. Harmer, '83, Columbus, OH
178 William J. Kostyshak, '83, Detroit, MI
179 Raymond J. Lipa, '83, Yale, MI

NU BETA CHAPTER

94 Scott M. Hayman, '81, La Crosse, WI
95 John A. Kincaid, '81, Crandon, WI
96 Michael J. Peil, '81, Milwaukee, WI
97 Dale C. Dixon, '38, Platteville, WI; Honorary
98 Allan A. Erdman, '81, Waukesha, WI
99 Christian R. Heer, '82, Winslow, IL
100 Royce A. Rowedder, Jr., '82, Watertown, WI
101 David V. Statz, '80, Baraboo, WI
102 Richard L. Theyerl, '82, Rockford, IL
103 Lee R. Tschanz, '82, Franklin, WI
104 Jeffery D. Weisensel, '82, Beavedam, WI

Chapter Directory

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***Beta:** C	Box 77, Route #1 Houghton, MI 49931
Gamma: W	Box 13, Colorado School of Mines Golden, CO 80401
Delta: E	c/o Fribley Commons 2315 Murray Hill Road Cleveland, OH 44106
***Zeta:** C	1935 Heatherwood Lawrence, KS 66044
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** *Each chapter's Region is denoted under its name, thus: C, Central; E, Eastern; S, Southern; and W, Western.*

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