



# THE SIGMA ZETAN

VOL. X

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NO. 1



*"What miracle of weird transforming  
Is this wild work of frost and light,  
This glimpse of glory infinite?"*

Whittier — The Pageant

## THE MERGER

Recently it was discovered that there are in existence two honorary science societies, the functions and purposes of which are quite similar. The older organization, Delta Epsilon, was established at Colorado Springs, Colorado, in 1921, while Sigma Zeta was founded in 1925 at Shurleff College, Alton, Illinois, and one year later was incorporated under the laws of the State of Illinois.

The suggestion was made that these two societies might be merged to the mutual benefit of the chapters of both organizations. The purpose of such a merger would be the formation of one very strong organization in this field.

Acting upon this suggestion Arthur W. Barton of the Kansas State College, Hays, Kansas, National Secretary of Delta Epsilon, forwarded copies of the Sigma Zeta constitution to chapters in their society with the request that they give the matter their serious consideration. A summary of the comments and reactions of the chapters of Delta Epsilon has not been completed.

Likewise, copies of the constitution of Delta Epsilon were mailed to each of the chapters in Sigma Zeta, with the suggestion that a careful comparison of the two constitutions be made in an effort to obtain the reactions of our society. Final action on this matter will probably be taken at the time of the national conclave.

While the function of both of these organizations is quite similar there appears to be a difference in the fact that Delta Epsilon places more emphasis on research, with Sigma Zeta stressing the attainment of a knowledge of the sciences. Some of the chapters of Sigma Zeta could

function on the research level, but for others it would be impossible.

When a careful comparison of the constitution of these two societies is made there is one vital difference in membership qualifications. Delta Epsilon requires the rank of Senior for membership while Sigma Zeta admits both Juniors and Seniors. The constitution also states that the candidate's course of study must include a major in some one department of mathematics or natural science, while Sigma Zeta puts a broader interpretation on this point by stating that active membership is extended to "any student above sophomore ranking, whose major academic interest lies in any of the fields of natural sciences or mathematics."

To meet these two requirements would constitute a serious hardship on the part of some of the chapters of Sigma Zeta. In fact it would mean that several of the chapters would cease to function.

In giving consideration to a merger of this type it is well for us to remember that chapters of Sigma Zeta have been established in Liberal Arts colleges and Teachers Colleges. No step should be given serious consideration which would mean limiting the activities of any of the active chapters of Sigma Zeta.

There is a feeling among several chapters in Sigma Zeta that it would be a fine thing to absorb the Delta Epsilon organization. Should this action be given favorable consideration by the chapters of Delta Epsilon, we feel sure that Sigma Zeta would extend a most hearty welcome to them.

Isn't it possible that a session of the Conclave could be devoted to papers on undergraduate research which has been carried out at the various institutions in which Sigma Zeta has chapters? Send your suggestions to the Grand Master Scientist, Howard W. Gould, Northern Illinois State Teachers College, De Kalb, Illinois.

The Grand Historian, Mr. S. M. McClure, earnestly requests that all chapters send him their histories. He is anxious to get started on his job, so that he "can at least report some progress at the Conclave this coming year in the matter of a history of the organization." Address: McKendree College, Lebanon, Illinois.

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**THE SIGMA ZETAN**

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Published in the interest of Sigma Zeta, National Honorary Science Society

Gilbert W. Faust, Grand Editor

Stevens Point, Wisconsin

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**THE GRAND OFFICERS  
1938-1939****Grand Master Scientist:** Howard W. Gould, Nu Chapter, DeKalb, Illinois**Grand Vice Master Scientist:** Wray M. Rieger, Delta Chapter, Kirksville,  
Missouri**Grand Recorder-Treasurer:** T. A. Rogers, Zeta Chapter, Stevens Point,  
Wisconsin**Grand Historian:** S. M. McClure, Beta Chapter, Lebanon, Illinois**Grand Editor:** Gilbert W. Faust, Zeta Chapter, Stevens Point, Wisconsin

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**HERE IT IS!**

Yes, here it is. We mean this copy of the **SIGMA ZETAN**. It's a little later than it was promised, but for the life of us, we can't see why we promised anything for the month of January. It's been a job trying to edit a magazine now at the end of the semester, what with exams, semester grades, registration and everything else that goes with it. And if it's true that the devil's work is done on Sunday, then expect the worst, because most of this was thrown together on a Sunday.

It's a beautiful Sunday evening, the kind we have only in Wisconsin: cold, (around zero,—not bad, of course); clear—no moon—the stars are points of gold on a black velvet sky, and there's a nice blanket of new-fallen snow on the ground. But as we looked through the notes from Lambda, we wondered, "Don't they have winter in good old P-A?" They're planning a bird banding expedition for the last Saturday in January! They can have it! We'll stick to our Chinese Checkers.

Incidentally, look at that report from from Lambda. It will be worth more than a glance. We didn't include the names of all their projects, but even so we wonder when those people find time to go to school. But maybe school is a secondary consideration with them, as it often is with us.

Speaking of projects, there is one that we should all undertake; and that is the resuscitation of Eta chapter. We almost put a black border around their letter, but maybe Eta's just dormant, not dead.

Reports from Delta and Theta aren't in yet. Wonder if they'll make it?

We were planning to include brief sketches, and maybe even pictures, of the Grand Officers—but they haven't all replied to our request for their autobiographies. These school teachers—they're worse than the kids! We know—we're one ourself.

Well, here it is, what there is of it. We hope you like it!

## NATURE IN THE RAW IS SELDOM MILD

(from a lecture before Kappa Chapter)

by C. W. Bennett

Member of the Chemistry Dept., W. I. S. T. C.

Not so long ago one of the tobacco companies used the slogan, "Nature in the Raw is Seldom Mild," to emphasize that its products had been specially treated. In rebuttal, a rival company emblazoned upon all the signboards "You Can't Improve upon Nature". Now, as a matter of fact, whatever the merits of the two products, modern living and all that goes with it is improvement upon nature. Houses, clothes, cooked foods and the like all represent man's attempt to improve upon his surroundings.

There is no field in which this is better illustrated than that of drugs. A number of our important medicines have had a history about as follows: An explorer finds natives using part of some plant to treat a disease. He takes samples back to his homeland where chemists extract the active principle. It is then used in the pure form while chemists are at work on its composition. After its structure is known and syntheses have been worked out, new sources of the drug are made available. The next step is the synthesis of similar compounds which are then tried out on animals for comparison with the natural material as to toxicity, habit-forming properties, and effectiveness for the particular action desired. In many cases a new drug is discovered which is more powerful than the natural one and much less toxic without being habit-forming.

The field of local anesthetics beautifully illustrates this principle of improving upon nature. It was noticed many years ago that the natives of South America after chewing coca leaves were able to run long distances without feeling the effects of fatigue. The active principle was found to be an alkaloid to which the name cocaine was given. This alkaloid is quite effective in relieving pain and it found extensive use in tooth extractions and in surgery. It is, however, very toxic and is more of a habit-former than morphine. Several modified molecules showed that with more methyl groups the compound became more toxic, but with fewer

methyl groups much less toxic. Eventually the arrangement of atoms necessary for the local anesthesia was established and various compounds containing this grouping,  $R-N-\overset{\cdot}{C}-\overset{\cdot}{C}-O-CO-R$ , were synthesized. The most outstanding result of this is novocaine or procaine commonly used in dental work. It is non-irritating, non-habit-forming, only slightly toxic and is a very powerful local anesthetic. Butyn is also an outstanding example of a mild synthetic local anesthetic having this grouping.

In the field of the treatment of the eyes, we have another interesting example. A variety of nightshade, known as belladonna (beautiful lady), was so named because its juice was used to dilate the pupils and give a glistening appearance to the eyes. The active principle, atropine, is extensively used to paralyze the accommodation of the eye to light and dark, and so make possible an examination of the eye for the fitting of glasses and other treatment. A modified molecule called homatropine, differing only in having one less methylene group, is just as effective, less toxic, more rapid in its effects, and passes off much more rapidly. This has been a great boon to those who must wear glasses or have them changed frequently.

In the treatment of stuffiness of the nose due to colds or hay fever and other allergies, the derivatives of ephedrin have had an important place. Ephedrin is the active alkaloid in Ma huang, a drug long used in China. This has the power of constricting the blood vessels, thus preventing hemorrhage, and raising the blood pressure. Its most common use is, as mentioned above, to shrink the mucous membranes of the nose. Ephedrin, the vegetable alkaloid, is very similar in character to an animal hormone, adrenalin, also called epinephrine, which is secreted by the suprarenal glands into the blood. Its effects are noticed when "we get so angry our blood boils." Adrenalin has a use in

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## THE CHAPTERS

### ALPHA

Shurtleff College, Alton, Illinois  
Affiliated 1925

Master Scientist, Willard Miller  
Recorder-Treasurer, Betty Blair

Membership: Active 5, Associate 8,  
Faculty 4

This year the members of Alpha chapter have an unusual opportunity for study in the field of natural science. At Marquette State Park, about twenty miles from Alton, the state of Illinois has started a program of locating, classifying, and making known to the public, the various species of bird and animal life, of plant life, and the geological specimens which are found there. This work is under the expert supervision of the State Naturalist, Father Link. To help promote interest in this work, the Grafton Nature League has been formed, and Alpha chapter is to have the privilege of supporting this league. The primary purposes of the whole project at Marquette Park are to arouse interest in the wonders of nature which are so abundantly found in the vicinity, and to carry out a general educational program among all age groups. In November, members of Alpha chapter attended a lecture given by Father Link, and they are eagerly making plans for cooperating in his work.

At the December meeting, Dr. Guerrant, Shurtleff's new chemistry instructor, talked to the chapter on "Believe nothing you hear and very little of what you read," especially in connection with advertised products. Other interesting programs are being planned for the remainder of the year.

### BETA

McKendree College, Lebanon, Illinois  
Affiliated 1926

Master Scientist, Lester Wilson  
Vice Master Scientist, Ralph Ruth  
Recorder-Treasurer, S. M. McClure

Membership: Active 6, Faculty 4

This year Beta Chapter has probably the smallest membership of any chapter in the fraternity, since only two active members, other than faculty, returned to college this year. At the same time, Beta may enjoy the largest percentage increase of any chapter during the year. With four juniors initiated just before the holidays, a 200% increase is already attained.

Two of the initiates are Owen Williams and Milton Sager, student assistants in the department of biology. Another, Leland Beeler, is a mathematics major, as is Dorothy Hertenstein, the only woman member of the Beta Chapter. Incidentally Dorothy is the fifth member of her family to be elected to Beta.

Eldon Bauer, M. S. last year and honor student at the 1938 graduation, is attending the University of Iowa where he holds an assistantship in the department of chemistry. Harold Hertenstein, also an honor man in the 1938 class and an officer in Beta, is doing graduate study in chemistry at the University of Illinois.

W. R. Schmidt, on leave of absence for graduate work at Washington University in St. Louis, returned to the campus this autumn as professor of chemistry.

Three years ago, Beta decided to center her activities about a memorial project honoring Professor Edwin Baker Waggoner, McKendree's pioneer science instructor. The Waggoner Memorial includes such diverse phases as the erection of a memorial cairn in the rock garden on the campus, the presentation of an annual science lecture, the establishment of a scholarship trophy for excellence in science, the preservation of the Waggoner collection of geological material, and the sponsoring of the Waggoner Science Society. All of these undertakings are carried on through semi-permanent committees, including both student and faculty members.

The Waggoner lecture for this year was given on the evening of November 15 in the Science building by Nat L. Shepard, research geologist of the Aluminum Company of America; it was entitled "Bauxite and Its Utilization," and was illustrated by some forty slides taken from photographs made in the field. Approximately one hundred students and alumni were in attendance.

Last year, Dr. C. J. Stowell, professor of mathematics and charter member of Beta, was made Dean of the college. After almost a year of study of the science situation here, several fundamental changes were adopted in the science curriculum. It is particularly pleasing to Beta, whose members assisted Dean Stowell in the revision of the course of study, that a larger-than-usual number of

the strongest students in the junior college work are selecting major work in mathematics or the sciences.

### GAMMA

Medical College of Virginia, Richmond, Virginia

Affiliated 1927

Master Scientist, Jack Wexler

Vice Master Scientist, P. R. Milton

Recorder-Secretary, Zalmon I. Blachman

Treasurer, Jessie Jeffers

Membership: Active 40, Associate 24, Faculty 13

Gamma chapter is now in its first year as a "four school" society at the Medical College. Prior to the second semester of last year Gamma chapter enrolled members only from the Medical School.

On Wednesday, Dec. 14, 1938, the initiation banquet of the chapter was held. The theme carried out was the expansion program now under way in the college and the part that the Gamma chapter can play in it. After the first of the year, a program of interesting talks will be delivered before the society at various times. Talks have already been scheduled by several prominent faculty members of the school, and several papers prepared by chapter members will be read.

### DELTA

State Teacher College

Kirkville, Missouri

Affiliated 1927

No report.

### EPSILON

Otterbein College, Westerville, Ohio

Affiliated 1929

Master scientist, Ralph Ernsberger

Vice Master Scientist, Berle Babler

Recorder-Treasurer, Mary Beth Cade

Program Chairman, Dorothy Steiner

Membership: Active 14, Associate 25, Faculty 6

The Epsilon chapter began the year 1938-39 by adding 7 new active members making a total of six active faculty members and fourteen student members. To date, the meetings have been given over entirely to student talks.

The membership for the McFadden Science Club, the associate organization of the Epsilon chapter, has increased to twenty-five members. Their meetings are separate from the chapter's, with each

meeting-night devoted to a different field of science. Students in the club who are interested in any one science are selected to give talks along the lines of their chief interests.

### ZETA

Central State Teachers College, Stevens Point, Wisconsin

Affiliated 1929

Master Scientist, Roland Cady

Vice Master Scientist, Eileen Marx

Recorder-Treasurer, Ruth Johnson

Membership: Active 29, Associate 12, Faculty 13

Zeta Chapter embarked on two uncharted courses this year. One of them was short and has been safely traversed. The other is long and fraught with difficulties. All this misplaced poetry is merely to introduce Zeta's two new projects:

First, its first annual Homecoming Initiation Banquet, which was held in conjunction with the formal initiation of new members on November 12. All alumni members were invited to attend the banquet at which both the new actives and new associates were guests. Although the response from the alumni was rather small, the event was pronounced a success and will be continued in the future. An interesting feature of the banquet was the fact that one of the alumni members witnessed the induction of his brother as an associate.

Second, Test-tubes and Telescopes, a radio program interpreting recent developments in the field of science. This program is sponsored by Zeta chapter, and will be on the air fifteen minutes per week during the second semester over State Radio Station WLBI, which has its studios in one of the college buildings. The program is designed to have general appeal and will deal with dramatizations of those scientific developments which have been in the public eye recently because of the attention that has been given them in newspapers and magazines.

In addition, Zeta's regular activities are being carried out. A float was prepared for the homecoming parade, which was not held on account of rainy weather. Each meeting brings to the chapter a talk on some topic of general interest to the science student. Recent programs have included a demonstration of a model steam locomotive, constructed entirely by Mr. R. M. Rightsell, physics instructor; a de-

monstration of short-wave therapy by one of the town's physicians; the showing of movies of operations performed in the local hospital; and the showing of a series of scientific movies which were being used for instruction in the science classes at both the College and Training School.

#### ETA

Southeast Missouri State Teachers College  
Cape Girardeau, Missouri  
Affiliated 1929

*(Editor's note: We very much regret having received no report from Eta Chapter. The following letter explains the reason.)*

"I have received your letter requesting information regarding the chapter of Sigma Zeta at our college. It appears that interest in the work has subsided to such a point that we can no longer consider that a chapter exists here. There has been no initiation of members nor election of officers for a couple of years.

Sincerely yours,  
Homer R. Bolen  
Professor of Biology"

(Signed)

#### THETA

Elizabethtown College  
Elizabethtown, Pennsylvania  
Affiliated 1932

No report.

#### KAPPA

Western Illinois State Teachers College,  
Macomb, Illinois

Affiliated 1935

Master Scientist, Kenneth McGee  
Vice Master Scientist, Don McClellan  
Recorder-Treasurer, Verna Pittard  
Editor, Clyde Graham  
Historian, James Nelson  
Membership: Active 24, Faculty 18

The most outstanding activities of the Kappa chapter during the fall quarter were the homecoming banquet, held October 28, 1938, at the Lamoine Hotel, and the November meeting which featured a discussion of photography. The discussion proved of great interest and was well illustrated with color slides of the campus.

**LET'S ALL PLAN TO ATTEND  
THE NATIONAL CONCLAVE TO BE  
HELD AT DE KALB IN THE SPRING.  
OUR GOAL IS 100% REPRESENTATION  
AT THE CONCLAVE.**

#### IN MEMORIAM

Whitney Turnbeaugh, who was initiated into Kappa Chapter, Sigma Zeta, on November 10, 1938, passed away on November 26, 1938. Mr. Turnbeaugh was a member of the junior class, had a high scholastic record, and was very prominent in campus activities at Western.

#### LAMBDA

Mansfield State Teachers College, Mansfield, Pennsylvania

Affiliated 1936

Master Scientist, Charles Anderson  
Vice Master Scientist, Janet Alger  
Recorder-Treasurer, Jeanette Anderson  
Membership: Active 24, Associate 5,  
Faculty 6

Lambda's multifarious activities began in September with a field trip to a marsh to study bird life, flora, and fauna, and to observe habits of beavers in the construction of their homes.

In October, Lambda studied its constitution to straighten out a muddle about membership. At the same meeting two films were presented on cell evolution, from the first division to the complex make-up of man. Committees were selected and the program for the year was outlined. The climax came in the social period when cider and pretzels were served as refreshments.

November brought the initiation of five active members, and their "creative answers to appropriate questions of a speculative nature." The ritual was memorized and presented in an impressive manner.

The December and January meetings were devoted to reports of projects, and to the starting of others. Included are: studies on heredity, using *Drosophila*; identification of micro-organisms; practical use of photography in science; soilless plant nutrition; infra-red photography; local geological research; photomicrography; experiments with dry ice and liquid air.

For the last Saturday in January, Lambda has scheduled its first annual bird-banding outing.

**MU**

Mankato State Teachers College, Mankato, Minnesota

Affiliated 1937

Master Scientist, Finn Larsen

Vice Master Scientist, Ira Johnson

Historian, Orville Lais

Recorder-Treasurer, Robert H. Heidel

Membership: Active 8, Associate 4, Faculty 4

Mu chapter is sponsoring a science club and is preparing the programs for the science club meetings.

**NU**

Northern Illinois State Teachers College, DeKalb, Illinois

Affiliated 1937

President, Eleanor Courtright

Vice President, Melvin Heiler

Secretary-Treasurer, Lillian Walk

Membership: Active, 26; Associate, 8; Faculty, 8

The activities of the first semester consisted of the initiation of fifteen new members, eight of whom are associates, the installation of officers, and the decoration of the prize winning float for the homecoming parade.

**NATURE . . . . .**

(Continued from page 4)

starting the heart action either at birth or after some severe shock, as well as for the relief of nasal congestion.

Both of these natural drugs are irritating and have been slightly modified to produce synephrin and neosynephrine, the latter of which is especially valuable. Another similar drug is benzedrine, frequently used in an inhalor for colds.

In the field of headache relief we have the development of aspirin and neophen from carbolic acid, a coal tar product. Aspirin is the acetyl ester of a carboxylated carbolic acid, but has few of the toxic effects of the plain carbolic acid.

Perhaps the best known drug is the Peruvian bark which led to the discovery of quinine and newer synthetic materials for the treatment of malaria.

Another not so well known example is that of chaulmoogra oil as a treatment for leprosy. The lepers of India have rubbed this oil on their sores for generations with some healing effect, but research showed that subcutaneous injections were

**XI**

Ball State Teachers College, Muncie, Indiana

Affiliated 1938

Master Scientist, James Findling

Vice Master Scientist, Max Earl

Historian, Elta Mae Schultz

Recorder-Treasurer, Dr. D. E. Miller

Membership; Active, 16; Faculty, 14

Xi chapter began its first year at Ball State Teachers College in the fall of 1938. Eight student members were carried over from the installation services which were held May 23, 1938. Charter members who were carried over include besides the officers, Frances Whisler, Bettie Kizer, Harold Kastner, Frances Carter and, Martha Jackson.

In a business meeting held in October, 1938, the constitution of the Xi chapter was formally adopted and plans were made for meetings for the coming year.

At a dinner meeting held November 16, 1938, eight students and two faculty members were initiated. The new student members include: May Furnish, Loren Jones, Betty BeVier, John Emerson, Shirley Crutchfield, Evert Beck, Robert Featherston, and Charles Brumfiel. The physiology department sponsored the program for this meeting and the chapter was favored by a most interesting talk on "Modern Medicine" by Dr. L. G. Montgomery.

Throughout the remainder of the year programs will be sponsored by the geography, biology, physics, chemistry, and mathematics departments. Although a young organization, Xi chapter is having a successful year and hopes to have even better years in the future. The fraternity owes much of its success to its faculty sponsors, Dr. P. D. Edwards; Dr. Floy Hurlbut; and Dr. D. E. Miller.

much more effective. Due to the viscosity of the oil, the injections caused considerable pain. When the oil was found by chemists to be the glyceryl esters of chaulmoogric and hydnocarpic acids, someone tried making the ethyl ester which was much less viscous. Thus science had again improved upon nature. Other attempts to modify the molecule have not resulted in greatly improved effectiveness although much work has been done.

One could find dozens of other examples, but these will serve to show that one can improve upon nature in the field of drugs and that many and more wonderful things may be expected in the future.