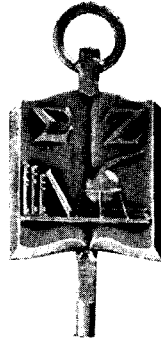


THE SIGMA ZETAN



VOLUME XVIII

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NUMBER 1

OUR LADY OF THE LAKE COLLEGE

THE SIGMA ZETAN

Official Organ of SIGMA ZETA, a National Honorary Science Society

NATIONAL OFFICERS

National President.....	D. E. MILLER, <i>Xi Chapter</i>
National Vice President	LEONARD A. FORD, <i>Mu Chapter</i>
National Recorder-Treasurer.....	GILBERT W. FAUST, <i>Zeta Chapter</i>
National Historian.....	S. M. MCCLURE, <i>Beta Chapter</i>
National Editor.....	SISTER MARY CLARENCE, <i>Sigma Chapter</i>
Past National President	W. E. ELLER, <i>Kappa Chapter</i>

SIGMA ZETA HONORARY SCIENCE SOCIETY

National Committee Appointments for 1946-1947

Alumni:

H. W. GOULD.....	<i>Nu Chapter</i>
C. J. STOWE.....	<i>Beta Chapter</i>

Founder's Cup:

P. D. EDWARDS.....	<i>Xi Chapter</i>
R. K. CARLETON.....	
E. E. LIST.....	<i>Alpha Chapter</i>

Ritual:

S. M. MCCLURE.....	<i>Kappa Chapter</i>
R. L. SHELLEY.....	<i>Xi Chapter</i>

Special Committee:

W. H. ELLER.....	<i>Kappa Chapter</i>
L. A. FORD.....	<i>Mu Chapter</i>
SISTER MARY CLARENCE.....	<i>Sigma Chapter</i>

Duties of Committees:

Alumni:

To work out a plan for keeping in touch with alumni, and for keeping them interested. This committee should work with the office of the National Recorder-Treasurer.

Founder's Cup:

To decide definitely on the nature and purpose of the Founder's Cup award, and to present a definite proposal to the 1947 National Convention.

Ritual:

To prepare for final presentation at the 1947 Convention the following:

1. Ritual for installation of new chapters.
2. Ritual for installation of faculty members.
3. Short ritual for initiation of student members.
4. Long ritual for initiation of student members.
5. Original or better interpretation of the letters Sigma and Zeta, and the symbols of our key.

Special Committee:

1. Come to a decision about the correct name of our Society and submit recommendations at the next National Meeting.
2. Investigate affiliation with the National Society of Honor Societies. Perhaps action on a recommendation could be secured even before the next national meeting.

MESSAGE FROM THE NATIONAL PRESIDENT

This year is the year when we must put forth our best efforts in every chapter to give Sigma Zeta its proper place in the science and mathematics programs.

During the past few years we have lost ground as an organization. Some chapters have become inactive. In others, membership has been so small that an interesting program could not be carried on. Faculty members who were interested in Sigma Zeta were called to other work. But all of that is a part of the past and we must look forward to a bigger and better program for the future.

Conditions are not back to normal in most institutions yet, but who is looking for the old normalcy? Let us look forward to being an active organization in an ever growing and expanding program in higher education. Our organization will never be the same again. It will be much better if we give it the attention which it deserves.

Let me suggest three important problems which every chapter should be considering.

Problem number 1.—Cooperation.

Cooperate in the best possible way with the national editor. The SIGMA ZETAN links us all together. It serves as a record of our activities and progress through the years. In addition it measures the spirit and vitality of the chapters. Make your reports to the editor prompt and complete. Also, give your earliest consideration to other correspondence, especially that from the office of our national recorder-treasurer. Remember that he is busy too and that every delay is an inconvenience to him.

Problem number 2.—Student Participation.

The real progress of SIGMA ZETA will be measured in student interest and participation. At least one meeting program in the year should be a student program of high quality. Perhaps it can be the result of the best efforts of the best students in their regular courses or on some special problems. Out of these reports, those most outstanding can be chosen for presentation at the annual meeting and publication in the Spring issue of the SIGMA ZETAN. Make good student papers a goal for your chapter this year and thus help to insure a worth while program for our annual meeting. As an incentive, expenses of those participating in the program of the annual meeting might be paid. These expenses could be handled jointly by the national and local chapters. You may recall that \$50.00 has been allocated for 1946-1947 to pay student expenses to the annual meeting.

Problem number 3.—Annual Meeting.

The students want this meeting to be on a college campus. The chapter which sponsors the annual meeting will gain tremendously in prestige on the campus and in real spirit in the chapter. In addition, individual students will benefit in the development of leadership ability and in other ways. However, I do not feel that under present housing conditions many chapters will be able to hold such a meeting on the campus. If there is one which can, let us hear your voice soon. By the last of January, we must make a decision on where the meeting is to be.

D. E. Miller.

ATOMIC ENERGY FOR — PROGRESS OR DESTRUCTION

An Editorial

The discovery of X-Rays by Roentgen fifty years ago parallels in some degree the recent development of the atomic bomb. As now, so then, severe condemnation was heaped upon the scientists for their well meant contribution. The London *Pall Mall Gazette* had this to say:

We are sick of Roentgen rays. It is now said, we hope, untruly, that Mr. Edison has discovered a substance—tungstate of calcium is its repulsive name—which is potential, whatever that means, to the said rays. The consequence of which appears to be that you can see other people's bones with the naked eye, and also see through 8 inches of solid wood. On the resulting indecency of this there is no need to dwell. But what we seriously put before the attention of the government is that the moment tungstate of calcium comes into anything like general use, it will call for legislative restrictions of the severest kind. Perhaps the best thing would be for all civilized nations to combine to burn all works on the Roentgen rays, to execute all the discoverers, and to corner all the tungstate in the world and whelm it in the middle of the ocean. Let the fish contemplate each others bones if they like, but not us.

When the development of the atomic bomb was announced, similar provocations were pronounced upon all scientists who aided in its development. These denouncements called for the placing of the scientists in a lethal gas chamber, the burning of all records, the destroying of all factories, and invoked legislative measures to control any further work on atomic power.

Now as then, but probably more so now, we need calmness to evaluate the meaning of this new force. The people must be informed of the scientific facts necessary to harness this force for peaceful purposes as well as of the enormous good which nuclear science can mean to the world.

The interest of chemists in nuclear science is nothing new; it dates back to the time of the alchemist who, as we know today, was hundreds of years ahead of his time in thought although his facilities for his projected achievements were just as inadequate as the slingshot is to a modern "pillbox". The chemist rejected the alchemist's goal and busied himself with those aspects of matter which emerge as long as atoms still remain. The discovery of radium at the close of the nineteenth century and more especially the demonstration by Rutherford that the alpha particle was none other than the nucleus of helium, newly discovered by Ramsey, proved that the atoms were no longer indivisible.

From the newly discovered radioactive substance it was learned that these heavy atoms could divide their nuclei spontaneously and in the process hurl out simple nuclei—electrons and neutrons—and simultaneously release energy far exceeding in potential that which the scientists could produce with the most efficient x-ray machine.

The discovery of heavy hydrogen by Urey in 1931 enabled the chemists to formulate the problems that could be solved by the aid of isotopic nuclei.

And just as the years following Roentgen's discovery were marked by advances in the natural and biological sciences, so also were those following Urey's discovery rich in the field of isotopic products.

It was during Rutherford's stay at Manchester that Bohr, Hevesy, and himself, while sipping their afternoon tea, began to speculate as to the possible time it would take for the elimination of the tea by the human body. They reluctantly concluded that the question would probably never be answered. Some time later, after heavy water concentration had been achieved, however, Hevesy, remembering the discussion, experimented on himself by ingesting a beaker of water containing a slightly enriched concentration of deuterium and traced the elimination of the enriched material through successive stages. The answer was startling—the tea we drink today is practically eliminated from the system week after next. Considering the total water content of the body this seems comprehensible.

This homely illustration serves as a pattern for the rich field of "tracer chemistry" which now plays such a large part in the study of biological and reaction mechanism. The isotope has become the chemist's messenger boy in journeys of discovery, which before were impracticable. Carbon, nitrogen, sulphur, iron, and iodine are among the elements of importance in the complex chemical processes occurring in various physiological systems of both plants and animals. The availability of radioactive isotopes from the nuclear reactions in the uranium pile will increase the utilization of tracer techniques.

An operating pile is a source of radio active materials many orders of magnitude stronger than any source previously obtained. As a result of the fission process, the fragments into which the uranium atom splits are radio active isotopes of the elements located in the middle of the periodic system and these can be purified chemically. Other radio active elements can be produced by inserting them into the pile and bombarding them with neutrons: this results in the production of radio active isotopes.

The life time of these elements varies from a fraction of a second to thousands of years. The radiations emitted from them are equivalent to the radiations emitted by radium and can be utilized in medicine on a much larger scale than has been possible with radium. Radio active materials are the source of great hopes as to the possibility of using large amounts as tracers in organic chemical and bio chemical work. That its availability will be adequate to allow research in this direction to proceed on a very large scale is greatly to be desired. Hence, it would not be surprising if the stimulus that these new techniques will give to science were to have an outcome more spectacular than an economic and convenient energy source or the fearful destructiveness of the atomic bomb.

It is contrary to progress to prohibit the development of nature's resources for long, but in the case of atomic power it is absolutely essential first to eliminate the cause of war and to create the machinery for peace before becoming enthusiastic over the full development of atomic power. For peaceful men there are fascinating opportunities for research in chemistry, physics, engineering, and biology as well as an unprecedented challenge for bold pioneering in this new field.

NEWS FROM THE CHAPTERS

Nu Chapter
Northern Illinois
State Teachers College
DeKalb, Illinois

Dear Editor:

This year the Nu Chapter of Sigma Zeta at the Northern Illinois State Teachers College has a membership of thirty-one members. Of this number, ten were initiated last spring into associate membership. The enrollment this year has increased tremendously, so we are confident that this increase will soon be reflected in our chapter membership.

Officers for the Nu Chapter who were elected at the close of school last spring are as follows:

President, Leatrice Banks
Vice-president, Shirley Samuelson
Secretary, Ursula Mendrip
Treasurer, Homer Knight

As vice-president, Shirley Samuelson is acting as program chairman and she and the other officers have planned the meetings for the coming year. On October 5 our chapter held its first regular meeting of the school year. It was a welcoming back the old and new members into Sigma Zeta. On November 12 we are going to have an outdoor sing around a big bonfire. During December our chapter of Sigma Zeta will hold its annual Christmas party with the Mathematics club on the campus. Other events for the year include a lecture by one of the students who took pictures of the natives during his army career in India, the Ira Jenks Lecture in February, and a picnic at the end of the school year.

We are in need of a fresh supply of little booklets giving some history

and other general information and entitled "The Sigma Zeta, National Honorary Science Society." I think we could use about 25 of these booklets and also about 50 pamphlets of the National Constitution. Our chapter would also like to have about 32 copies of the Sigma Zetan. The magazines and other pamphlets could be sent to my address. Thank you for the above favors. I remain

Sincerely yours,

Leatrice Banks,
 President, Nu Chapter of
 Sigma Zeta

Epsilon Chapter
Otterbein College
Westerville, Ohio

Dear Editor:

The Epsilon Chapter started the school year 1946-47 with eight active members and six active faculty members. On October 30, 1946 we initiated twelve new active members, bringing our total active list to twenty six actives.

We are now having two meetings a month, on the second and fourth Wednesday of each month.

This year was started with the following officers: President, Marylee Keller; Vice-president, Evelyn Cliffe; Recorder-Treasurer, Dick Rich; Publicity Chairman, Marilyn Shuck; Program Committee, Bill Esselstyn, Mary Hennon, Mary Ellen Case.

We will need twenty-six copies of the Sigma Zetan for our active members. The associate members have not as yet been organized

Sincerely,

Dick Rich, Recorder-Treasurer

Sigma Chapter
Our Lady of the Lake College
San Antonio, Texas
November 9, 1946

Dear Editor:

Sigma chapter of Sigma Zeta opened its new session with a welcome party for the science and mathematics majors on September 26. A delightful evening was spent playing bunco after which chocolate cake and vanilla ice cream were served.

Sigma Zetans Hold Triple Function

The second anniversary of the installation of Sigma chapter on the campus was observed by the initiation of three associate members into active membership on October 23. Those initiated were: Helen Hoyo, Angie Howard, and Barbara Johnston.

The second function was the installation of the officers for the year. President, Nancy Morris; Vice-president, Mary Sartori; Secretary, Angie Howard; Treasurer, Alda Gianotti; Historian, Barbara Johnston.

The eleven sophomores who became associate members are: Mary Carroll, Virginia Rose Hargis, Annie Loftin, Wanda McGrath, Dorothy Jo Murray, Jeanette Mann, Mary Lou Smith, Marjorie Tarin, Jean Tinney, Julie Tiblier and Cecilia Wright. After the completion of the ceremonies, Miss Anne Wagner, head of the Physical Education Department, accompanied the group to the Aurora Apartments for a banquet.

*Sigma Chapter Members Plan
 Dallas Trip*

At the regular monthly meeting of Sigma Zeta on November 7, plans

were made to attend the meeting of the Collegiate Academy of the Texas Academy of Science which is being held concurrently with the Senior Texas Academy on December 13 and 14. Nancy Morris, president of Sigma chapter will read a paper on "Chemicals from the Sea". Besides the regular presentation of scientific papers, members of the Collegiate Academy will hold a symposium on the development of the physical and biological sciences in Texas. This is the fiftieth anniversary of the foundation of the Texas Academy of Science. Sister Mary Clarence, sponsor of Sigma chapter, has been appointed organizer and discussion leader of this feature of the program. Those attending the meeting will be: Nancy Morris, Mary Sartori, Alda Gianotti, Angie Howard, Helen Hoyo, Barbara Johnston, Annie Loftin, Dorothy Jo Murray, Wanda McGrath, Mary Lou Smith, Virginia Rose Hargis, Cecilia Wright.

Sister Mary Berenice, of the Biology Department, will also attend the meeting.

Sincerely yours,

Mary Lou Smith
 Reporter, Sigma Chapter

Lambda Chapter
State Teachers College
Mansfield, Penna.

Dear Editor:

Lambda Chapter of Sigma Zeta is still inactive, so there is no news to report from here save that.

Very truly yours,

Leonard K. Beyer
 Biology Department

Macomb, Illinois.
November 12, 1946

**Kappa Chapter
Macomb, Illinois**

Dear Editor:

This is news of Kappa Chapter of Sigma Zeta at Macomb, Illinois. The officers are: President, Robert Gilmore; Vice-president, Dorothy Millen; Secretary - Treasurer, Barbara Sweeney; Historian, Dorothy Sorrell; Editor, Fern Ebbert.

Our first meeting was held October 16. Mr. Young, a new member of the Geography Department, spoke on "Understanding Our Scientific World." At the November meeting nineteen new members were initiated. Two students in Chemistry, Elizabeth Turney and Homer Simms, gave talks. Refreshments were served.

The active members: Faculty 24; Students, 25. The next meeting will be held December 11. At that time the mathematics department will present the program.

Sincerely yours,

Fern Ebbert,
Editor, Kappa Chapter.

**Delta Chapter
Northeastern Missouri
State Teachers College
Kirksville, Missouri**

Dear Editor:

There is no one enrolled in College who was a member of Delta Chapter of Sigma Zeta. We shall have a small group who we think will qualify by this spring, and it is our intention to reorganize Delta Chapter at that time.

With all of the students of science and mathematics that we have at present, we should soon have a strong chapter. As soon as we are

reorganized, I shall send you an account of it.

Fraternally,

Dr. Wary M. Rieger,
Head, Division of Science
and Mathematics

**Beta Chapter
McKendree College
Lebanon, Illinois**

Dear Editor:

The opening of the school year 1946-1947 finds the Beta chapter carrying on with faculty members only, as all student members of last year have graduated or moved. We have a large increase in our college enrollment this year, and it is probable that there will soon be eligible candidates again. Meanwhile the correspondence of the chapter is being carried on by the undersigned.

Fraternally yours,

C. J. Stowell,
Recorder-Treasurer

**Xi Chapter
Ball State Teachers College
Muncie, Ill.
Nov. 21, 1946**

Dear Editor:

Xi Chapter has grown along with the growth of Ball State. At our October meeting we welcomed thirteen active members and five associate members. They are Paul Baker, Mary Alice Brown, Mildred Densmore, Wayne Easterday, Phyllis Hershberger, Delmar Lewis, Jane Newman, Ruth Ratcliff, Mary Frances Riggs, Raymond Rittman, Edward Shieve, Dwain Small, Naomi Young and Barbara Cochran, Dale Klingerman, Betty Spall, Earl Tharp, Florence Wood, Mr. Gerald Alexander, Mrs. Gertrude Couch, Mr. Dave Hartley and Mr. John Smith-

son, new faculty members, also were initiated. We were very pleased with the new initiation service which was used at this meeting. It was a product of our president's efforts. We are interested in learning about the nature of the initiation service in other chapters.

Officers for this year are Clarence Buesking, president, Bertha Brittingham, vice president, Betty Leuenberger, secretary, Dr. Robert Shelling recorder-treasurer.

Xi Chapter is looking forward to sponsoring Dr. Haas on our campus January 7. Dr. Haas is of the Department of Chemistry at Purdue University and has been working with atomic energy. We also are looking forward to our annual senior banquet in the spring. Last May ten seniors were honored at a banquet held on the first floor banquet hall of the Muncie Y.M.C.A.

We are anxious to see the new Sigma Zetan. Please send us sixty copies. You may send them directly to Dr. Shelley at the above address.

Sincerely yours,

Betty Leuenberger
Secretary, Xi Chapter

THE ALUMNI CORNER

Dear Editor:

It was in February 1943, the last semester of my very cherished four year college term at Our Lady of the Lake, that I began my work, as chemist, at the City Water Board, here in San Antonio, working half a day until my graduation in May.

I started my work in the laboratory under the direction of Mr. Dale Rhodes, then in charge. During April of the same year Mr. Rhodes left and I was placed in charge of the laboratory with Mr. C. H. Wetzel as assistant.

Today I find my work as fascinating as I did the day I started. The greater part of my work consists of bacteriological analysis of the water supplied the city of San Antonio. Chemistry naturally enters into my work and some chemical analyses are also run daily. Artesian wells supply the city's water requirements. Representative samples of the water are taken throughout the city daily and analyzed, for one can easily imagine the disaster that would come from furnishing a city with impotable water, and the only way to be aware of it is by constant vigil. When contamination of the water is detected, proper measures to purify such waters are employed.

It was my good fortune to have the opportunity of attending a refresher course on the "Bacteriological and Chemical Analysis of Water" at Texas A & M College last year. The course was a part of the Texas Water Works and Sewerage Short School offered annually. Besides being a refresher course, the course also presents and emphasizes newly accepted methods in the analysis of water.

The State Department of Health keeps in close contact with all laboratories of the state and from time to time sends state representatives to visit the laboratories and acquaint the technicians with any new methods that may have been developed.

We are very proud of the commendation given our work in the laboratory here this year. Out of all the municipalities in the state, our laboratory was given the distinction of being "The Best Laboratory for Control."

I like to feel that in some measure I am helping to safeguard the health of the residents of our city.

Margaret Mary Fogarty
Sigma Chapter Alumnae

RICEMENT BUILDING BLOCKS

By MARJORIE TARIN

A waste product of the rice industry, the rice hull, may become a profitable asset to the rice industry and a partial answer to America's building material shortage, as a result of a farmer's discovery of the possibilities of using rice hulls in the manufacture of building blocks. Rice hulls are one of nature's most perfect packaging materials due to its indestructibility resulting from its high mineral content. The residue after burning is mostly silica. This gives it the desirable qualities looked for in a building material, namely, resistance to fire and weathering.

Mr. Leonard Chappell, a farmer, discovered the indestructibility of the rice hull while ploughing his field, near El Campo, Texas, when he noticed that the hulls buried years before were still intact. Urged on by this discovery he made up a batch, compounded of cement, sand, and rice hulls and moulded it into a block. The results were so gratifying that Mr. Chappell, Mr. Robert Koons, a friend, and Mr. Curley Duson, a rice broker, went into partnership forming one of Texas newest chemurgic industries.

After some experimentation it was found that compounding rice hulls in their natural state with burned hulls or ash mixed with cement produced a material that had some of the qualities of both concrete and wood plus other assets not claimed by either. Thus Ricement was developed and the Ricement Manufacturing Company of El Campo, Texas, was formed.

Tests show that Ricement can be cut with a common hand saw; it will take and hold a nail or screw; it is fire proof and termite proof. It gives almost complete insulation; it has a low water absorption rate; it does not expand under extreme heat and thus eliminates cracking, characteristic of ordinary cement. It will take on a polish, when mixed for that purpose, and can be used for roofing, flooring, tiles, and fence posts.

According to construction engineers, material testing about 1000 pounds per square inch is adequate for use in buildings, where blocks are employed. Compression tests show that breaking pressure is up to 1141 pounds per square inch for Ricement blocks, for combinations of cement, whole hulls and hull ash.

Operations at the El Campo Plant were started in September. The Rice Milling Company there is supplying the raw material and the building space. The plant is using a compression type of machine forming both hollow and solid Ricement blocks measuring 12 by 18 by 5 inches. Daily capacity is about 3000 blocks.

(This paper was read at the regular meeting of SIGMA Chapter of SIGMA ZETA in October.)

SARELON, A NEW SYNTHETIC FIBER, MAY BE SPUN FROM PEANUTS

By HELEN HOYO

A recent discovery made at the Southern Regional Research Laboratory at New Orleans, may become of great industrial importance to Texas peanut growers. The synthetic fiber developed at the laboratory from peanut protein is an outstanding product and one of fascinating possibilities to Texas farmers, who have grown as many as 365,000,000 pounds of peanuts annually. This would provide huge quantities of protein by-product cake at the oil mills.

The oil is extracted from the peanut; the protein or meal is purified, and then dissolved in an alkaline medium forming a viscous liquid which is forced through rayon-type spinnerets into an acid coagulating bath. The yarn thus formed is treated with formaldehyde to harden the protein and then subjected to stretching action which is believed to induce alignment of the molecules.

Sarelon is the name given to this new synthetic fiber. Mixed wool and Sarelon, or cotton and Sarelon yarns may be successfully dyed by selection of suitable dyestuffs. Sarelon, when developed to its full possibilities, may become a competitor of cotton, and, perhaps wool.

(This paper was read at the regular meeting of Sigma Zeta in November.)

"QUAN"

*In English classes we write theme after theme
In History we use up paper by the ream
But if you want a course where hours are
short and full of bliss*

*Just sign up for a course in gravimetric
analysis.*

*All day long you bake and wash and apply
heat galore*

*Then you weigh and heat and bake some
more*

*And if results are much too high or low
Just put the precipitate in the oven and bake
another hour or so.*

*If you break crucibles and other things,
Don't think your luck has taken wings,
You must accept your fate and be meek
For certainly you have poor technique.*

*Your balance rider may want to take flight
And seem inconstant on both left and right;
You may think his legs are all out of joint
But it's because you forgot to take your zero
point.*

*Should you find a speck upon your desk or
sleeve*

*Then it is your hour to wail and grieve,
For it is nothing else, sad to state,
But some of your precious ammonium
phospho molybdate.*

*If the precipitate you do not deem
To be as healthy as it should seem
Do not think that hope is dead
But simply add some methyl red.*

*Take good care of Desiccators,
They are not meant to be aggravators
And if they such may sometimes prove
It's because the lid you too oft remove.*

*In problems we add, subtract and multiply
But do not think you can get by
No use to complain of headaches and pain
Believe me, high standards we must maintain.*

—A student

SIGMA ZETA CHEER SONG

CHORUS:

We are Sigma Chapter of Sigma Zeta
Our colors are white and blue
From chemistry, biology and math
We learn what is true
We are Sigma Chapter of Sigma Zeta
And proud to bear the name:
A symbol of those things we love,
We strive to achieve our aim.

VERSE:

Our paths may diverge,
Our progress be slow,
But constantly on we go
Our aim to unfold
The mysteries of old
And enrich man's life and
soothe his pain

Repeat Chorus.

