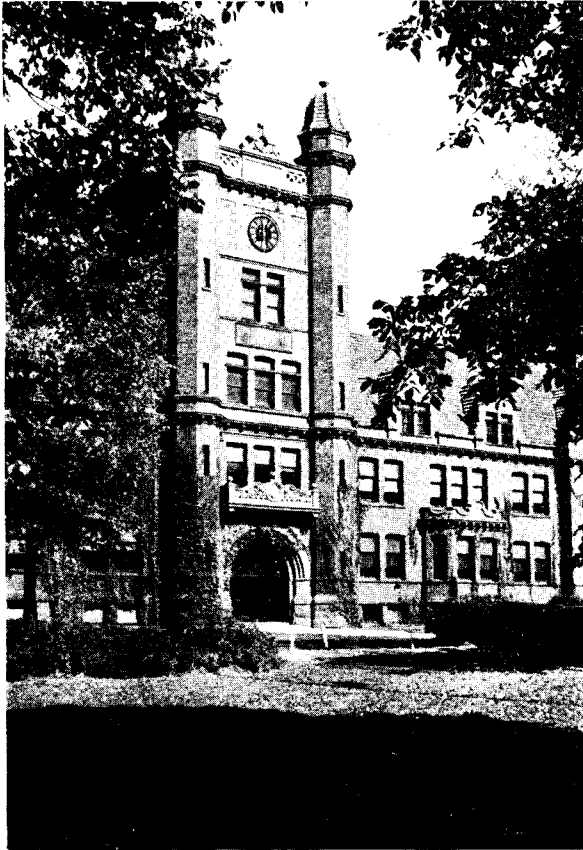


# THE SIGMA ZETAN

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THE JAMES MILLIKIN NUMBER

## THE SIGMA ZETAN

Official organ of Sigma Zeta, a National Honorary Science Society

### National Officers

National President .....	W. H. Eller, Kappa Chapter
National Vice-president .....	D. E. Miller, Xi Chapter
National Recorder-Treasurer .....	G. W. Faust, Zeta Chapter
National Editor .....	A. S. Lyness, Zeta Chapter
National Historian .....	S. M. McClure, Xi Chapter
Past National President .....	J. L. Glathart, Alpha Chapter

## EDUCATION IN A CHANGED WORLD

### An editorial

Young men who have been inducted into service or who have enlisted, upon taking leave of their friends or relatives, are often heard to remark substantially this: "I shall be glad when it is all over and I can come home again. — and I will come back — to take up life where I left off and do some of the things I have always wanted to do." Such an expression contains a fine philosophy of life but is based on rather a false assumption that conditions and times will be largely the same then as now.

Paradoxical though it may seem, those who crave peace must fight to win it, and must consciously struggle, often with force, to preserve it. We of this generation like to think that we would like to win a permanent peace and pass it down to the next generation as a priceless heritage but a war to end all wars is still largely a Utopian dream.

The world will not return to normalcy after the war in the sense that the ways of life to which we were accustomed before the war began will be continued. Wars seem never to leave the world the same.

In the formation of the earth's crust, any part of the earth which experienced a wrinkling or folding of the rock strata was greatly changed in many other ways, because the alteration in the surface often affected the climate and the climate affected the life of that region. That part of the earth never could be the same again. Similarly, but much more profoundly, such a social upheaval as a war, leaves the combatant nations worse in most respects, better in some particulars, perhaps, but undoubtedly different.

Educational courses will be changed after the war. There will be less demand for local history courses such as the History of Maine, Oklahoma, or Oregon and more courses will be needed in World History, because our interests will be tremendously broadened with no point on the earth more than thirty flying hours distant from any other point. The size of the earth has been reduced in size enough already to make all nations seem near neighbors. World Geography will replace local geography to a considerable extent and there is sure to be increased interest in foreign languages. The English Language will be more widely used than before the outbreak of the war, though probably not to the extent that the people of present English-speaking nations might desire. Someone may invent a universal language that would receive more enthusiastic endorsement than any language now in general use by any world power. Political Economy and the social sciences will receive more attention in our schools while mathematics and the physical sciences will be the most popular branches of science for years to come.

Emotional sets and attitudes will be changed after the establishment of our next world peace. National preferences and racial prejudices will either be greatly modified or completely eradicated if the peace is to be permanent in

any strict sense of the word for these biased feelings lead to hatred and hatred leads to war. It may take a generation or two of diligent effort by the world's best teachers to develop in society the ideals on the one hand and the inhibitions on the other that will insure stability of those psychological reactions so necessary to cooperative effort in a democratic state.

Sigma Zetans will have many opportunities to encourage and participate in new developments along the line of scientific research. The secretary of one of our chapters has recently deplored the fact that in that particular chapter it seems as though Sigma Zeta has become a society for co-eds only, so many of the men have entered the combat services. It may be regarded as a privilege and should be considered the duty of the lady members of all our chapters to keep the local organizations alive until the day when the fellows return to try to orient themselves in a changed world in which science societies will flourish more than at any time in the past. It is one way to "keep the home fires burning."

Such straight and purposeful thinking as is done by members of Sigma Zeta will help to feed and clothe a needy post-war world during the days that we hope are not too far distant. It is only reasonable to suppose that from our society will come in the future new discoveries, recipes, and inventions which will add to enjoyment of human life and counteract to some extent the misuses of scientific effort that have caused so much destruction of life and property. Even though the American way of life is constantly changing the principles that have made that way attractive will be advocated and taught by all loyal Sigma Zetans because we are all anxious to see in our lifetime the situation, hoped for and predicted by the ancient Hebrew prophet, when "nation shall not lift up sword against nation, neither shall they learn war any more".

## A TOAST

HERE'S TO THE NEW PI CHAPTER OF SIGMA ZETA. MAY YOU LIVE LONG AND REMAIN ONE OF THE MOST ACTIVE CHAPTERS OF THIS NATIONAL FRATERNITY AND MAY YOU ALWAYS FEEL AS PROUD TO BE ASSOCIATED WITH US AS WE OF THE OTHER CHAPTERS ARE TO BE AFFILIATED WITH YOU.

## DEDICATION

We are glad to dedicate this issue of the Sigma Zetan to the Pi Chapter recently established at The James Millikin University of Decatur, Illinois.

## OBJECTIVES

The James Millikin University is a twentieth century institution which seeks to achieve distinctive excellence in higher education. Its foundation is Christian and its viewpoint progressive. Since the year of its opening, it has sought to coordinate the traditional offerings in liberal arts with many vocational studies which prepare youth for the practical art of earning a living.

## HISTORY

The James Millikin University is one of the newer educational institutions of the country, having been founded at the beginning of the twentieth century by James Millikin of Decatur. In the spring of 1900 Mr. Millikin formally pro-

posed the establishment of an institution of higher learning in the city of Decatur, Illinois, under conditions which were met early in the following year by the citizens of Decatur and the Synods of Indiana, Illinois, and Iowa of the Cumberland Presbyterian Church. The charter of Lincoln University, at Lincoln, Illinois, was amended April 30, 1901, so as to provide that its name be changed to Lincoln College and that it, together with the proposed Decatur College



This is to introduce to our readers President John C. Hessler of James Millikin University who is to be congratulated for having on his campus a new society with such high ideals and purposes as those that have been continuously maintained by Sigma Zeta since its establishment in 1925.

and Industrial School, constitute the James Millikin University as its legal successor, with the provision that each college be governed by a local Board of Managers appointed by the Board of Trustees. Since the union of the Cumberland Presbyterian Church with the Presbyterian Church, U. S. A., in 1906, both colleges have been under the general supervision of the Synods of Illinois, Indiana, and Iowa, insofar as the appointment of Trustees is concerned. The control exercised by the local Board of Managers and the administration of the College is nonsectarian.

The first president of the Board of Managers was Mr. Isaac R. Mills; the first president of the College was Dr. Albert R. Taylor, who served from 1901 to 1913 and from 1915 to 1919. Other presidents have been Dr. George Emory Fellows, 1913 to 1915; Dr. Louis Edward Holden, 1919 to 1924; Dr. Mark Embury Penny, 1924 to 1930; Dr. Jesse Hayes White, 1930 to 1934; and Dr. John Charles Hessler, 1934.

The President of the United States, the Honorable Theodore Roosevelt, on the 4th of June, 1903, delivered the dedicatory address on the completion of the first group of four buildings. The College was opened on September 15, 1903.

### BUILDINGS AND EQUIPMENT

The University campus occupies an area of approximately thirty-five acres, located three-quarters of a mile west of the central transfer station and easily accessible from all parts of the city by bus. This site is one of natural beauty, slightly rolling, with trees and flowering shrubs. Near the buildings are the tennis courts; on the north side of the campus, the athletic field. Fairview Park, containing the courthouse associated with Abraham Lincoln, adjoins the campus.

On the campus are located eight attractive buildings, all of Elizabethan architecture. Four were constructed in 1903 when the University was founded; the others were erected in later years.



### LIBERAL ARTS HALL AND ALBERT TAYLOR HALL

This building contains on the first floor the administration offices, Albert Taylor Hall, and lecture rooms. On the second floor are the physics and biological laboratories, museum, and lecture rooms. The third floor, with exceptional lighting facilities, contains the studios for the department of art and lecture rooms.

### ENGINEERING HALL

Situated west of the Liberal Arts Hall and connected with it by corridors is the Engineering Hall. It contains the chemical laboratories, the mechanical drawing rooms, and the departments of Industrial Arts, Economics and Business Administration.

### HOUSEHOLD ARTS HALL

This hall located east of the Liberal Arts Hall is similar in design to Engineering Hall and like it is connected with the main buildings by corridors. The building is devoted to the work of Home Economics.

### MACHINERY HALL

Directly north of the main buildings is Machinery Hall which contains the forge, machine, pattern making, and wood turning shops and the auto mechanics laboratory. The University heating plant is in the east half of this building.

### ASTON HALL

This dormitory, erected in 1907, has accommodations for about eighty women. It is pleasantly located among trees and is easily accessible from the main buildings. Practically half of the first floor is devoted to the reception room, drawing room, and the director's apartment. The dining-hall is a sunny, white-tiled room overlooking the east campus. There is an infirmary and a part-time resident nurse.

### THE GYMNASIUM

The Gymnasium, completed in 1912 and located adjacent to the athletic field, has a floor space of 100 by 55 feet. The building contains also the offices of the physical directors, trophy rooms, bath and locker rooms for men and women, a running track, and an apparatus room.

### THE CONSERVATORY OF MUSIC

Located on the southwest corner of the campus is the Conservatory of Music, erected in 1912. In addition to the excellent offices of administration this building contains about eighty practice and recitation rooms. The sound-proofing system is one of the most effective in any conservatory. The interior is in Tudor style. The library, with its open fireplace, is an inviting place for study. Kaeuper Hall, named for a former director of the Conservatory, is used for recitals and lectures. It is a beautiful and dignified room with a seating capacity of two hundred.

### THE ORVILLE B. GORIN LIBRARY

The \$150,000 fireproof library, erected in 1931, was made possible by a gift to the University by the Trustees of the Millikin Estate. This building provides requisite space for modern library uses, including a handsome, excellently equipped reading room, numerous seminar rooms, rooms for private study, a well-appointed lecture room, and efficient steel stacks, providing a capacity for about 85,000 volumes. The total building capacity is about 125,000 volumes, with provisions for further growth.

### LABORATORIES

The science laboratories are equipped for instruction and study in Chemistry, Biology, Physics, Pre-Engineering, and Home Economics. Special opportunities are provided for advanced work by qualified students.

### LIBRARIES

The University Library contains over 35,000 volumes exclusive of pamphlets. There are over 7,000 volumes of bound periodicals for reference in addition to a good collection of general reference sets and usable public documents. The library receives over 200 current periodicals, including not only general magazines and newspapers, but technical magazines in the fields of science, psychology, education, literature, languages, architecture, home eco-

nomics, industrial arts, engineering, economics, religion, music, and art, most of which are bound as the current volumes are completed.

The Decatur Public Library also is at the service of the University; many of its departments have been enlarged with the interest of the University in view. It contains an excellent reference department, and a large periodical file, together with such public documents as the interests of the community demand.

### OUT-OF-CLASS ACTIVITIES

James Millikin University believes in activities outside the classroom. The opportunities for participation are many in order that each student may have a wide choice in selecting fields for self-expression. The activities include dramatics, debating, journalism, athletics, musical organizations, religious groups, departmental clubs, honor societies, social organizations, and a student governing agency.

Maximum credit for out-of-class activities is granted as follows: Intercollegiate Debating—6 hours (pre-requisite: Argumentation and Debate); Choir, Band, Orchestra—a total of 6 hours. Since musical activity grades are based largely on attendance, they are counted for credit hours toward graduation, but not in securing scholastic honors nor in figuring the total academic credit which a student may carry in a semester.

### DRAMATICS

The dramatic efforts are carried out principally through an organization known as the Town and Gown Players under the direction of the department of Speech. Two major plays in addition to several one-act plays are presented each year. All students are given an opportunity to try out for these dramatic productions.

### STUDENT GOVERNMENT

The student governing organization, with authority to supervise and centralize all student organizations and activities, is the student council. This group consists of four members from the senior class, three from the junior, two from the sophomore, one from the freshman, three from the faculty, elected by the students, and the dean; and the president of the University ex-officio. The president of the student council is chosen by the members of the council and is the president of the student body.

### CHAPTER NEWS

**Pi Chapter** James Millikin University, Decatur, Illinois

The roster for this new chapter reads as follows:

Faculty Advisor .....  
 ..... Dr. Gladys C. Galligar  
 President ..... J. T. Holloway  
 Vice-President ..... William H. Hill  
 Secretary-Treasurer .....  
 ..... Virginia Lambert

Members:

Gene Cottle  
 William H. Hill  
 J. T. Holloway  
 Robert Kaufman

William Grigbaum  
 Deane Sensenbaugh  
 Betty Ann Bailey

Members who have entered the service this semester:

Dale P. Boden  
 Edward Elslager

**Alpha Chapter** Shurtleff College, Alton, Illinois

We are publishing below the well-written letter from the secretary to the editor:

April 1, 1943

Dear sir:

Our chapter has been hard hit by

the call of the armed forces, but we are only glad to be able to answer this demand of our country. Within the last quarter about ten members of our chapter have left and mostly girls remain on our roll.

Our most interesting program which we have put on has been our Social Science Day Program which we have observed for five consecutive years. Each year the program is varied somewhat taking the many aspects of Social Hygiene. Several times we have had noted speakers, such as Dr. Groves B. Smith and Dr. Dickerson from Chicago. Several programs have been given by our own chapter members who prepare talks upon Social Hygiene. This program has been readily received by the student body on our campus for whom the program is given.

We have not taken in any new members for the second semester as yet but we shall do so within several weeks.

We hope that this extra issue of the Sigma Zetan will be a great success and our chapter will be anxious to get its quota as soon as it is off the press.

Sincerely yours,

Signed, Eileen Ash, Secretary  
Alpha Chapter, Sigma Zeta,  
Shurtleff College,  
Alton, Illinois.

**Beta Chapter.** McKendree College,  
Lebanon, Illinois

(The following letter which we quote verbatim came too late for publication in the February Number of the Sigma Zetan)

January 23, 1943

Dear Mr. Editor:

I am very sorry to be late in answering your letter of December 18th, but I became the recorder of the local chapter only twelve days ago. The former Recorder-Treasurer, Russel Drennan, has received his B. S. from McKendree and has gone to Baton Rouge, La., where he is assistant to the chief chemist of a

bauxite plant recently built by the Aluminum Ore Company.

In giving the rest of the information I shall adhere rather strictly to your outline.

The present local officers are  
President . . . . . Frank Glotfelty  
Recorder-Treasurer . . . . .

. . . . . Robert Dannenbrink

Our present membership includes eight active members and eight associate members. Five new men, three seniors and two juniors were initiated this year.

Our society has made plans for restoring to circulation a traveling trophy presented to Sigma Zeta in 1938. This trophy will be given for one year to the student in the college who makes the most progress in science that year. This is known as the Waggoner Memorial Trophy.

Our chapter feels that a national conclave should be held this year, if at all feasible, preferably at some central point.

I think that about twenty copies of the Sigma Zetan will be ample for our chapter. If there is any other information regarding our chapter that you desire, I shall be very glad to furnish it to you.

Yours very truly,

Signed, Robert Dannenbrink,  
Recorder-Treasurer.

**Kappa Chapter.** Western Illinois  
State Teachers College,  
Macomb, Ill.

Elsewhere in this issue appear three papers which the Secretary-Treasurer of this chapter felt were so interesting to the Kappa Chapter that they ought to be shared with the other chapters. We are always glad to publish such articles.

Dr. Hal Carter, who was formerly teaching in the chemistry department of the W.I.S.T.C. is now doing research work at Iowa State College in Ames.

Dr. Henry Stubblefield has been transferred to Washington where he is head of the Transfer and Supply

Division of Chemical Warfare.

Two student members of the Kappa Chapter, Paul Brown and Leslie Dowell, President of Sigma Zeta, have received scholarships from Purdue University where they will be doing graduate assistantship work in chemistry.

Four new members were initiated in the Kappa Chapter on April 13. Following the initiation ceremony the annual spring banquet was held.

Another New Chapter.

Just before going to press the editor was informed by the National Recorder-Treasurer that an application for membership has been received from Indiana Central College, Indianapolis, Ind. This is good news. We hope the request will be granted.

**Nu Chapter.** Northern Illinois State  
Teachers College, De Kalb, Ill.

This chapter seems to have trouble keeping a president this year. Bruce Churchill, newly-elected president to

replace Ross Hulmes, has now also been called to the service. As yet another election has not been held. Several other members of this chapter have also gone. The total of ninety-one who left in a body from this college on March 27th included two Sigma Zetans.

Plans for taking in new members are now under way.

Due to the impossibility of securing equipment quickly the science building has not been opened for use. However, it is quite positive that it will be occupied during the coming Summer Session. The dedication of this new building will be a part of the Commencement Exercises in June. Governor Greene has been invited to take part in the ceremony.

We enjoyed the February Issue of the Sigma Zetan a great deal and believe this publication should be continued.

Signed, Mary Flynn

Secretary Nu Chapter.

#### A LETTER FROM THE NATIONAL RECORDER-TREASURER

April 15, 1943

To the members of Sigma Zeta:

We all regret that conditions imposed by the war make a Conclave this year unwise, if not indeed impossible. Informally among themselves, the members of the National Council have agreed that such is the case, and they have likewise agreed that the present officers might very well continue until another Conclave can be held.

There were several matters left hanging after the Conclave last year. First, a constitutional amendment had been presented, changing the names of the **Grand Council** and officers to **National Council** and officers. The amendment was ratified by mail by enough chapters which were not represented at the Conclave to give the necessary eight affirmative votes. The amendment was

therefore declared ratified on June 26, 1942.

Second, the ritual committee had presented a preliminary report with a recommendation that the committee be authorized to prepare a complete draft of the ritual and submit it to the National Council for approval. A very brief ritual has been submitted, but since some members of the ritual committee and some of the National Council felt it inadequate, it has not been approved. As soon as anybody can find time to work on it between army classes and victory gardens, a new draft will be submitted. There is at least one redeeming feature in the set-up this year. A ritual **has been prepared, and is on paper.** That is **some** progress, anyway.

The change in the National Recorder-Treasurer's office has been made with very few innovations. Mr.

Rogers and I both felt that the former method of reporting new members was unsatisfactory. The information cards were cumbersome, and called for a lot of information which was irrelevant. A new tentative form for reporting new members is now in the hands of the chapter secretaries. Likewise, a new form for the annual report was adopted this year. This report should be in the national office now (April 15) but there are still a number of chapters which have not reported.

This office has undertaken one big project on which considerable progress has been made. We are attempting to establish a card index of all Sigma Zeta members, past and present. It is a big job because membership records in the past have been incomplete. It becomes necessary frequently to call on the chapters for help. When that call comes, will you please respond promptly? And will you please acknowledge correspondence promptly? There is nothing quite so disheartening as not knowing even if our letters get to their destinations. It took over six months to establish contact with Gamma Chapter this year, and we haven't heard from Omicron yet. That's why considerable expense was incurred in sending annual report blanks by registered mail. Even Omicron accepted their blank, but it hasn't been returned yet.

The best news of the year is that a new chapter has been formed at James Millikin University, Decatur, Illinois. It will be known as the Pi Chapter. The charter has not been granted yet, but the chapter's petition has been approved and its annual report has already been filed.

At present our Chapter roster is as follows:

ACTIVE:

- Alpha, Shurtleff College, Alton, Illinois
- Beta, McKendree College, Lebanon, Illinois

Gamma, Medical College of Virginia, Richmond, Virginia

Epsilon, Otterbein, College, Westerville, Ohio

Zeta, Central State Teachers College, Stevens Point, Wisconsin

Kappa, Western Illinois State Teachers College, Macomb, Illinois

Lambda, State Teachers College, Mansfield, Pennsylvania

Mu, State Teachers College, Mankato, Minnesota

Nu, Northern Illinois State Teachers College, DeKalb, Illinois

Xi, Ball State Teachers College, Muncie, Indiana

Pi, James Millikin University, Decatur, Illinois

INACTIVE:

Delta, State Teachers College, Kirksville, Missouri

Eta, State Teachers College, Cape Girardeau, Missouri

Theta, Elizabethtown College, Elizabethtown, Pennsylvania

Omicron, Wilson Teachers College, Washington, D. C.

The name of Iota Chapter has been dropped from the list. Although a petition for the chapter had been approved, the organization disintegrated before a charter was issued.

Considering the difficulties under which we are now working, we have no reason to be discouraged. Many faculty and students have answered calls to service, and the demands made on those of us who stay behind are heavy. But at any cost, let's keep our chapters active, if it's possible only to have a skeleton organization.

Please be assured that the National Officers stand ready to help you in any way they can. With a reasonable amount of cooperation on your part, our future is assured.

With sincere good wishes,  
 Gilbert W. Faust  
 National Recorder-Treasurer

SCIENTIFIC FACTS

The mind is like the stomach. It is not how much you put into it that counts, but how much it digests.

\* \* \* \* \*

Recent researches at the Smithsonian Institute indicate that nightly sleep, or something very much like it, is as essential to plants as it is to men and other animals.

\* \* \* \* \*

It is now possible to mold lenses already polished and ready for use in eyeglasses, binoculars, and cameras. The lenses, which are unbreakable, are made from plastic transparent materials. They have optical properties said to be superior to glass, and are only half the weight of glass. The new method does away with the long and expensive process of grinding.

\* \* \* \* \*

When it comes to curves and corners, few of us realize how fast we are going. A 3000-pound car making a turn of 500-foot radius, has to overcome a centrifugal force of only about 150 pounds at 20 miles an hour. But at 30 miles an hour, the force has grown to 360 pounds, and at 60 miles an hour, it is nine times as great as at 20—more than 1400 pounds trying to push us off the road.

\* \* \* \* \*

Put a drop of sulphuric acid into the heart of each dandelion head. This penetrates to the root and kills the plant permanently. A second application may sometimes be required.

\* \* \* \* \*

It has been said that a bee travels upwards of 44,000 miles to gather a single pound of honey.

\* \* \* \* \*

The alien population is still very large. The latest census shows the foreign born to number nearly 12,000,000.

\* \* \* \* \*

The record for removing an airplane engine, and substituting a new one, is 54½ minutes.

\* \* \* \* \*

The persistently recurring stories concerning sea serpents probably refer to gigantic eels, which are sometimes eight feet thick and sixty feet long.

\* \* \* \* \*

As far as fish are concerned, a fisherman can talk away to his heart's content, for fish, according to scientific studies, cannot hear and are affected only by sounds that cause vibration in the water.

\* \* \* \* \*

The strongest living thing, in proportion to its weight, is the beetle, which can carry a burden 850 times heavier than itself. If man possessed proportionate strength, he could carry a load weighing 70 tons.

# "e" THE TRANSCENDENTAL

by

EVERETT H. KING

Student at Western Illinois State Teachers' College  
Macomb, Illinois

## "e" THE TRANSCENDENTAL

It seems a little strange that mathematicians for many hundred years struggled with numbers such as pi and e, yet it remained for the eighteenth century to give it an established place like the archimedean number pi in the set of real numbers. Furthermore and stranger still, though only two such numbers had been found, pi and e, yet Cantor proved the set of transcendental numbers to be non-denumerable and thus there are more of such numbers, than there are of the integral set. It remained for the newer scholars to find and prove other numbers to be transcendental.

First as to the name given to this particular set of numbers, this set was termed transcendental because they were beyond their experience, (that is of the men who first used them). It was like finding a flaming diamond in a wealth of ordinary white diamonds. They seemed so few, they transcended all the other numbers. Together with all the other irrationals, such as the surds and roots, they all form the irrational part of our real system of numbers.

One of the main characteristics of transcendentals as well of the other irrationals, is the impossibility of ever expressing them as finite decimal fractions, as a repeating non-terminating decimal fraction, or as a ratio of two finite integers. There are several different methods of representing their true value. One is through the use of limits, another through the use of infinite series (convergent series). However all practical uses center around decimal approximations, varying in accuracy according to the fineness of work to be done. For example two of the most well known expressions are:

$$e = \lim_{k \rightarrow \infty} (1 + \frac{1}{k})^k ; \text{ as } k \text{ approaches infinity.}$$

$$\text{and } e = 1 + \frac{1}{2!} + \frac{1}{3!} + \frac{1}{4!} + \dots$$

Both of these methods will give a value that will be as accurate as desired if enough terms or a large enough value of (k) is selected.

To twenty-six places it is 2. 7182818284590452353602874

The first place that (e) was actually studied was in regards to the compound interest formula  $A = P(1 + \frac{r}{k})^{nk}$ , where A is the amount for n years, P is the principal, r is the rate of interest, and k is the fractional part of an interest period. An interesting problem in connection with this formula is the

amount due after a principal of one dollar is deposited at compound interest of 100% to compounded instantaneously. The amount would then be exactly equal to (e), or approximately 2.71828 dollars.

If k in the above formula is considered to be infinite, the formula becomes  $A = P e^{nr}$ . The formula yields the amount after compounding at r percent on

P dollars, continously for n years. In the general form  $y = k e^{mx}$ , where k and m are constants, this goes by the name of the "Snow ball law". It is applicable to all forms of growth that grow and increase according to the present size at every instant. This applies to compound interest if the interval of compounding is removed. It governs the speed of some chemical reactions; it determines how fast bacteria increase during a given length of time.

A few other places that (e) bobs up is in the law of chance, in the normal distribution curve and in the equation of the catenary. This only suggests the wide extent of (e) in the present mathematical world. John Napier worked out his first set of logarithms to the base (e). It is the law of growth.

After seeing the wonderful applications of this transcendental number and its many-sided character, and considering the miracle number, pi, who can fail to come to the realization that perhaps there exists a multitude of such numbers just as wonderful. We know that the transcendentals are more numerous than intergers yet we only have two of them of striking properties. Tomorrow may find the world in possession of many more as striking as (e) and pi.

A paper by Mary Agnes Geisler of Kappa Chapter, Western Illinois State Teachers College, Macomb, Illinois

### Chinaware

The art of making dishes dates back as far as the beginning of civilization, for wherever man found clay which could be moulded, he used it to form vessels and images. Clay, the essential product in pottery is a decomposition product of certain kinds of rocks containing feldspar.

There are three main types of dishes—earthenware, which is opaque and made from dark colored clays; porcelain, which is vitreous, translucent, and made from white clays; and semivitreous dishes which have not been fired to as high a temperature as porcelain. Temperatures as high as 2200 Fahrenheit are required to fire the porcelain type, and this must be carefully controlled over a period of two days.

Although pottery-making has been an important industry in England and Europe for several centuries, there are many excellent potteries in the United States today which are making chinaware second to none in the world. The state of New Jersey is famous as a large pottery-making center. Outstanding names of American china are Lenox, Lamberton, Haviland, Pickard, Syracuse.

Because of Uncle Sam's need for dishes to supply the service camps, the peak of the pottery industry in the United States was reached in 1941 in order to fill government orders.

In selecting fine china two points are important—select a reputable dealer, and buy in "open stocks". Rubber faucet tips, drainers, and mats help "slam-bangers" avoid much breakage in washing their dishes. Abrasives should not be used and careful storing on racks is desirable for the best service from a set of china.

A paper by Paul E. Brown, Kappa Chapter, Western Illinois State Teachers College, Macomb, Illinois.

### POLARIZED LIGHT

The explanation of polarized light is based upon the wave theory of light. In ordinary light the vibrations occur in all planes, at right angles the line of propagation. Plane polarized light has its vibrations confined to one plane. Light passing thru a Nicol prism of calcite can vibrate in only one plane. If a second prism is placed beyond the first with its principal plane in line with that of the first, light can pass through both prisms. When the principal planes of the two prisms are at right angles no light can pass. This is the principle of the polarimeter.

If a substance can rotate the plane of polarized light, either to the right or the left, that substance is said to be optically active. Cane sugar, camphor, tartaric acid and lactic acid are examples of optically active compounds. The analyzing Nicol of the polarimeter can be rotated to determine the exact amount that any solution rotates the plane of polarized light. The degree of rotation depends upon the nature of the substance in solution, the concentration of the solution and the temperature. The polarimeter may, therefore, be used in analytical work.

If polarized light is passed through a transparent object and then projected upon a screen, an intricate color pattern will be the result. This pattern indicates the points of least and greatest strain. This property of polarized light is used by glass-blowers in constructing apparatus of maximum strength and by designers whenever an object must endure considerable stress.

Crystal formation may be shown in an interesting manner by melting a few crystals of acetamide upon a glass plate and passing polarized light through the plate as the acetamide cools. A delicate, growing color pattern of the crystals that are forming will be cast upon the screen.

You feel warmer when snow is on the ground than when it isn't, temperature being the same. The white spreads the heat around and doesn't let it sink into the ground. When people wear white in summer or light tints of yellow, blue or green--the sun's attack is thwarted like rain against a pane of glass. Water tanks, tents and summer dwellings should also be of some light color.

\* \* \* \* \*

Plain table salt removes egg stains from silverware.

\* \* \* \* \*

Motor trucks for the army are built to climb 65 per cent grades, slopes so steep that men cannot negotiate them on foot.

## THE NATIONAL COUNCIL SIGMA ZETA HONORARY SCIENCE SOCIETY OFFICE OF THE NATIONAL RECORDER-TREASURER

April 15, 1943

### FINANCIAL REPORT, FISCAL YEAR 1942-43

#### SUMMARY:

#### RECEIPTS

Balance on hand, May 16, 1942 .....	\$441.04
Deposit on Charter fee (Pi Chapter) .....	5.00
Initiation fees (138 @ \$1.25) .....	172.50
For jewelry .....	354.50

\$973.04

#### DISBURSEMENTS

##### For 1942 Conclave

Delegates' travelling expense .....	\$ 49.97
Printing programs .....	4.00
Recorder-Treasurer's travel expense .....	11.42

\$ 65.39

##### For the SIGMA ZETAN

May, 1942, issue .....	7.35
February, 1943, issue .....	55.00

62.35

##### For jewelry

The College Shop .....	600.00
Balfour Co. for old sample keys .....	11.50

611.50

##### For the national office

Postage .....	22.38
Stationery .....	47.00
Office supplies .....	8.15

77.53

##### Miscellaneous

Engraving gavel .....	10.38
Edward J. Hughes, Sec. of State for Illinois, Corporate report .....	1.00

11.38

828.15

BALANCE ON HAND, April 15, 1943 .....

144.89

\$973.04

Gilbert W. Faust  
National Recorder-Treasurer



