Mrs. Richards. Following the dinner a large number of friends called to meet the guests.

The first Sigma Xi Club was organized at the university in February 1915 by eleven members of Sigma Xi. After functioning for one year activities ceased until the fall of 1921 when the club was reorganized with twenty-two resident members. This club enjoyed a steady and continuous growth until this year when there were forty-seven members.

A very important service, which the club rendered to the university, was to give President Buchanan such support that he was able to set aside $1,000 of university funds for graduate scholarships in the natural sciences. This fund, which has since been multiplied, is now appropriated each year for, what are now called, research scholarships and research fellowships. These are available in every department of the university offering graduate work.

The last important service rendered to the university was the taking of the numerous steps which were necessary for meeting the requirements for a chapter of Sigma Xi. A long, detailed, informal report was prepared during 1927-28 and submitted to the executive committee which met in Chicago in the spring of 1928. During the following school year an official visitor was entertained; he reported his findings to the executive committee which met in New Haven in April, 1929. Since both of these committees reported favorably the club was asked to submit a formal printed petition to the national convention of the Sigma Xi which met in Des Moines on December 28, 1929. At this convention the University of Oklahoma was given a unanimous vote of approval.

Since that time negotiations have been under way which resulted in the formal installation of the Oklahoma chapter of the Sigma Xi on April 8, 1930.

Who are the chosen?

Chapel address during Sigma Xi installation

By Dr. G. W. Stewart, President of Sigma Xi

Today, as you know, will be installed here a chapter of Sigma Xi. This society is devoted to the promotion of research. While limited to scientific research, it is deeply conscious that creative work is much alike in all fields. Creation requires a high type of ability. The activity of our society is but one indication of the increasing emphasis upon ability. I refer to innate gifts, that which cannot be attributed to environment. Education everywhere is stressing attention to differences in this quality. We are urging that the most able students be somewhat segregated in special sections in order that they may progress there without hindrance of the inertia of ordinary minds. Executives in industry, in employing college graduates, are attempting very consciously to obtain the services of those that have demonstrated in college a high order of ability. Statistics show that such graduates, employed in industry, have a much better chance in salary over a long period of years. Moreover, success in life as measured by any reasonable standard has been shown to have a high correlation to success in class room in college. Thus it is that graduate colleges award fellowships and scholarships chiefly to those who have made the highest records in college. Everywhere we are made conscious of the superior chance of those of high innate ability. So great is the emphasis that many of the students here before me would have good reason to be discouraged. The average student may well ask, what opportunity is there for me in competition with those whose mental qualities give them a clear advantage? Are not these superior ones really the “chosen”? I propose to answer these two questions.

But first let it be emphasized that I can find no satisfaction in attempting to minimize the difference in mental ability between the average person and those in the uppermost five per cent. That difference is truly great. We have one or two very fast hundred yard dash men in college today. They can run that distance in 9.6 seconds. How fast are you? You may have a very good ten second sprinter...
here. If so, our two fast men would defeat him by four yards. Some of you who are good runners can do the hundred in 10.6 seconds. Our record men would defeat you by ten yards. On the track the 10.6 second man would be an object of pity, if not derision. But what is needed in athletics to ascertain the difference in ability is a severe test. Then the individual difference appears to be enormous. We have every reason to believe that the magnitude of variation in mental ability is equally as great.

So I can get no comfort for the average man on the basis of small differences in mental ability. They are really very great. But I can get help from a consideration of what actually occurs in life. I shall draw upon the field of science, pure and applied, for illustration. I shall attempt to show that wide though the differences in talent may be, there is ample room for encouragement. You may not be a genius in creative literature, but you may be comforted in knowing that perhaps there have been on the average only about one such in seventy years. You may regard with awe the work of the great artists, but you must realize that success in most walks of life does not require such highly specialized talent. I think success in pure and applied science is much more typical of life for it embodies both those reasoning and imaginative faculties that are solid and substantial rather than extraordinary and that are in common use. What I am anxious to have you understand is just this. When I look at the enormous differences in ability of individuals I am discouraged for many of you. But when I look at the affairs of men as they actually are I am very much heartened. Actual progress depends upon something more than high mental gifts. I shall not attempt to tell you why save by obvious inference. But let me tell you my story.

The uniqueness of the last century of effort rests largely in the achievements in science. Witness Pasteur's discovery that diseases are caused by organisms, by germs, and the resulting tremendous strides in the prevention of disease; the invention of the telephone, the telegraph, the dynamo, the motor, the radio, the airplane; the improvements in transportation, in communication, in commerce, in manufacturing; the lessening of hard bodily toil by the adoption of easier methods; and, not least, the great strides in man's inquiry into the nature of the material world, his investigation of the structure of the atom itself. One cannot consider these great achievements in retrospect without marvelling at the power of the human mind. It appears that if the mind can but concentrate upon the solution of any problem, no matter how difficult, measurable success will finally be achieved. But say each of you, "these accomplishments are the deeds of great men, of great minds." Yes, that is true. Yet I should not be satisfied to spend one moment in applauding the great if I was not fully convinced that the achievements of the great are but magnified visions of the achievements possible to every one of us. One reason such deeds appear to be so surpassingly great is that we have not had the privilege in each case of a close-up view of the struggle and the gradual attainment of success. My contention during the brief period of this address is that could we but know such details, we would heartily agree to the following four propositions:

1. Achievement depends importantly upon hard work.
2. Achievement usually demands the application of sound reasoning rather than of genius, of persistence rather than inspiration.
3. The factor of chance in achievement is of much less importance than is commonly believed.
4. Achievement beyond all anticipation is possible in all walks of life.

In presenting these four propositions it is not my purpose to argue logically, but merely to furnish concrete facts.

The tendency is for us to put blind trust in inspiration and genius. Many of us are inclined to hide behind the skirts of such a bogie and excuse ourselves for not being more strenuous. Are we justified? Let us consider two significant developments of recent years with which we are all somewhat familiar. The automobile did not spring into its present form in a day, a year or even a decade. The first motor vehicle was built 160 years ago by a Frenchman Argnot. It was a three wheeled wagon propelled by steam and travelled at the rate of two and one-half miles per hour. In 1884, or forty-six years ago, the gasoline engine was first applied to the propulsion of a bicycle. In 1896 or thirty-four years ago, the first important road race was won by a gasoline car which travelled 1095 miles at the average rate of seventeen miles an hour. You will recall the gradual advance from one cylinder engines to two, four, six, eight, twelve and sixteen. In about 1908 the noisy chain transmission was replaced by a shaft drive, and engines for the first time were removed from beneath the car and placed in an accessible position in front. For forty-six years the automobile has made constant progress. We have gone from one to sixteen cylinders. The serious question arises just why did not some one receive a real inspiration and design the car of today instead of permitting the relatively slow progress of forty-six years? Or why did not a person of genius arise that could make this entire stride in but a year or two?

One of the first inventors, if not the first, of a flying machine was the famed Leonardo Da Vinci in the fifteenth century. This machine required the muscular effort of the aviator to operate, but its requirement was too great and it never flew. Hastening in our review to modern times, let us cite the feat of the Wright brothers in 1903, or twenty-seven years ago, in making their first actual flight with gasoline engine propulsion. The total distance travelled was 852 feet. Seven years later the length of flight by any aviator had been extended to 288 miles and the maximum air speed to about seventy miles an hour. In 1919, the maximum length of flight had become that of across the ocean, about 1980 miles covered in approximately sixteen hours, and the maximum speed about 150 miles per hour. Twenty years ago two passengers were carried for a duration of ten minutes. Today fifty passengers have been carried. Just why was progress so slow during the years? Was this progress awaiting the discovery of new principles? No. Why did not some one have an inspiration and make the complete stride in one year? Where were the so-called geniuses? Here is the answer. That sort of inspiration or that kind of genius which would have led to a speedy development of the airplane and the automobile is to a surprisingly large degree a fiction and does not participate in the affairs of this world. We have been incorrectly informed, through observation of achievements without detailed knowledge of the histories thereof, and have been led to believe that some individuals in one supernatural effort have had the good fortune to achieve wonderful results over night. But it is nearer to the truth to say that a scrutiny of the actual progress of almost any achievement shows its well defined step by step procedure, at no point presenting an accomplishment that bears the mark
of the fictitious inspiration or genius that is supposed to be in evidence in the careers of the "great." The development of the automobile or airplane is typical of progress in all walks of life. Patient, persistent, applied effort will win success and so-called inspiration and genius are not of sufficient practical consequence to distract our attention or to lessen our faith in work. It is true that occasionally great strides in progress are made in a short time, but examination shows that back of these apparently rapid improvements appear painstaking labors of years. Brilliant achievements have instructive backgrounds. The story of David and Goliath may be cited. David slew the great challenging giant by his sling and stone. A brilliant deed. But we learn also that David had practiced patiently and persistently while watching his father's flocks. The result secured by David seemed brilliant, but we find that success depended upon painstaking effort removed from the applause of mankind. For fear you believe I am overstating my case let us select one of the great men of our day to speak for himself. To many Edison is a genius, a wizard, a real magician. But he resents being called by any of these names, honorable though they may be. Let me read you what he says: "Genius is one per cent inspiration and ninety-nine per cent perspiration. The three great essentials to achieve anything worthwhile are first, hard work; second, stick-to-it-iveness; third, common sense." So incorrect is the people's estimate of Edison's secret of success than when America plunged into war, the newspapers and the people openly stated that now American genius would show the world new tricks, now Edison would invent something that would bring rapid supremacy to the allies. But Edison didn't and the reason he did not was not because he did not try. He made about forty-two inventions during the war period but all of them came to naught. None have been thought worthy of use. When put to the test he did not meet the expectation of those who had a blind faith in the greatness of this genius. But Edison's life is the substantiation of his philosophy of work, persistence and common sense. I wish now to speak more at length about Edison, the person. The illustrations of the auto and airplane developments have not been inquiries into the workings of the mind of one person. Let us see if Edison's life is not an illustration of the four points of my address; hard work, sound reasoning and persistence, unimportance of chance, and achievement beyond all anticipation. I have read with a critical interest three published lives of Edison. I have been engaged for a number of years in research in physics, which is very close to the most notable accomplishments of Mr. Edison. May I now report to you what seem to be the qualities that have made him great. I will name six. In none of them is he surprisingly great. But the remarkable combination of six strong qualities has made him a brilliant star in men's minds. One can have a star football team without an individual star, but one player cannot make a team really great.

I shall now name these six qualities without reference to their order of importance. The first is this: Edison has from earliest boyhood loved to do creative work—something new. He seemed to realize that every work of man was imperfect and undeveloped. He knew he could improve anything which he touched, did he but have the time to devote to the problem. So strong was this motive in him that school as conducted in his day seemed dull. In fact he had only three months of it. His teacher thought Edison dull, but he was merely wool gathering, being bored by the routine set before him.

The second point is that, in spite of his brief schooling and his unwillingness to adapt himself to such routine, he has always been a thorough student. Before he entered upon the invention of the electric incandescent lamp, he studied thoroughly all he could find with reference to gas as an illuminant. He studied its manufacture, its distribution, its effect on health. His final determination to make an electric lamp was not quickly reached. It was not an inspiration. It was an idea that occurred to perhaps hundreds of people, but Edison harbored the idea in his mind, turning it this way and that. His knowledge of gas was essential. For, when he at last started upon the trail for the lamp, he spent about $100,000 before he had it in commercial form. His determination was not merely stubbornness. It was caused by an opinion reached through careful study of all the facts. It was the determination of a close and thorough student.

With his fondness for creative work, with his background of fact through study, he was ready to invest his life and his all. This leads naturally to a third quality. He was always at his problems, paying no attention to apparent failure. It is said that he tried 6000 filaments before he achieved success in his lamp. One can scarcely describe as brilliant an effort that was repeated 6000 times before success came. I am certain no professor would apply such an adjective to a student who was trying to pass a course on the second trial. As for 6000 trials that stupidity would be beyond our imagination as well as beyond the time required for the span of life of both professor and student. I hold the stick-to-it-iveness of Edison as of more significance than his alertness or brilliancy. Neither the electric light nor the phonograph were entirely new. He had hints and suggestions from the electric arc light and from the fore-runner of the phonograph. I cannot see that his own alertness or brilliancy is notable. It was enough, however, for a man of the qualities I am mentioning.

The fourth quality that is important in Edison's career is that found in his physique. He was physically capable of long periods of concentration without sleep, and of such disregard of health as would kill any ordinary person. And as part of his physical equipment should be mentioned his entire avoidance of worry. He confined himself to intellectual struggle and did not indulge in that sort of inefficient, exhaustive fussiness which we call worry. As a consequence of his remarkable physique, Edison has been able to spend 61 years in invention. Of all the qualities of Edison, his physical endowment seems to be the most extraordinary.

As a fifth quality I should place his commercial sense. Will the proposed invention pay if successfully devised? This quality is one of Edison's strongest. But he has learned through experience. His first invention was a voting machine intended to enable a legislative body to vote by means of buttons placed on the desks of the members. It would have saved the house of representatives many hours, for a roll call in such a large body consumes a great deal of time. Edison failed to inquire as to whether or not the house desired such a time saver. He proceeded with his invention, and perfected it. It was his first really significant one. He took it to the appropriate committee of the house and there to his dismay learned that the house frequently used the roll-call as a legitimate method of delay. So his first invention was a failure. At that time Edison had not developed a strong commercial sense. But this lesson was
sufficient. Thereafter he was on the alert in this respect. But this fifth strong quality of Edison was one that he developed by experience.

The sixth and last quality I desire to mention is that of insistence upon a clear, and hence most nearly correct, vision of the goal of any and every project before him. It is most fortunate that he did so insist. He was not at all mathematical, but he realized when mathematics was needed; by experience he developed that habit of clearness of thought which is one of the strong claims of mathematics in an educational program.

Here then we have six items of quality, love of creative work, thoroughness in study, stick-to-it-iveness, physique, commercial sense, clearness of vision. In all of them he has been excellent. In none of them has he been supreme. He is a vivid example today of the truth of the four points of this address, already repeated several times.

But if you are argumentative, you would remind me that the illustrations here used are taken from science, whereas it is well known and fully illustrated by many examples in literature and art, that the truly great accomplishments are made by men of genius. In response to this viewpoint as stated, permit four remarks. First, I call to your attention that I have not denied genius, but have merely attempted to show that in the achievements of our everyday world, genius plays a far less important role and is far less necessary for attainment of distinction than we are accustomed to believe. There is, in fact, an extraordinary waste of talent. Second, you should be reminded that the great achievements in art and literature which we are taught to admire appropriately, are not those of this day or of any limited period, but are selections from the centuries of the human race, and that our own achievements, to none of which we have shown that high mental gifts are not all. They must be possessed by a person of character. A high power automobile is of little service without an excellent steering wheel. There is today a tremendous waste of talent. It is largely because of this fact that I am able to give examples today that testify to the four simple proposals of this address.

1. Achievement depends importantly upon hard work.

2. Achievement usually demands the application of sound reasoning rather than genius, or persistence rather than inspiration.

3. The factor of chance in achievement is of much less importance than is commonly believed.

4. Achievement beyond all anticipation is possible in all walks of life.

He who will attempt unto these four points and will conduct his life accordingly, will surely be among the chosen.

EDITOR’S NOTE—Dr. L. J. Cole’s interesting article, Heredity as We See It Today, will be published in the June issue, as will Dr. Joseph Quincy Adams’ library dedication address.

Here and there with Sooner News of the breadwinners by classes

MARRIAGES

SHIRLEY-COOPER: Miss Lois Shirley, ex ’21, and William Fenimore Cooper, March 16 at Santa Barbara, California. Delta Gamma. They will make their home in Los Angeles where Mr. Cooper is connected with a law firm.

ASHBURN-ERICKSON: Miss Ruth Marguerite Ashburn and Alton H. Erickson, ex ’29, April 26 at Tulsa. Mr. Erickson is an engineer with the Bell Telephone Co., and after he completes some work in Kansas City they will be at home in Oklahoma City.


WARR-EWING: Miss Aileen White, ex ’25, and Carl Ewing, April 20 at Oklahoma City. Home, Oklahoma City.


TOWE-BRAKE: Miss Myrtle Towe and Bruce Drake, ’29 physical ed., April 19 at Oklahoma City. Home, Owen Apartments, Norman.

STREETER-HORNICKER: Miss Mildred Sterrer, ’21 ed., and Raunacey Hornicker, ’30 bus., April 19 at Oklahoma City. Alpha Phi Phi Delta, Kappa Sigma. They will make their home in Norman.

PENNINGTON-GRAY: Miss Mary Katherine Maguire, ex ’27, and James Graham, April 19 in Oklahoma City. Pi Beta Phi. They will make their home in Springfield, Illinois.

MAGUIRE-GRAHAM: Miss Mary Katherine Maguire, and James Graham, April 19 in Oklahoma City. Delta Gamma-Beta Theta Pi.


SMALLEY-HORBURGH: Miss Noble Smalley, ex ’27, and Keith Horburgh, January 24 at Hartshorne.

MCFARLAND-RIDDLE: Miss Gladys Malloy and Virgil Riddle, ’17 arts-sc., March 4 at Tulsa. Home, Okmulgee.


COLLINS-COOPER: Miss Mary Collins, ’29 arts-sc., and William O. Coe ’28 law, February 22 in Oklahoma City. Kappa Kappa Gamma—Phi Kappa Phi. They will have their home in Oklahoma City.

GRIFFITH-MAGUIRE: Miss Mary Katherine Maguire, and James Graham, April 19 in Oklahoma City. Kappa Kappa Gamma—Phi Kappa Phi. They will make their home in Springfield, Illinois.


WILKINS-SMITH: Miss Mary Katherine Maguire, and James Graham, April 19 in Oklahoma City. Kappa Kappa Gamma—Phi Kappa Phi. They will have their home in Springfield, Illinois.

CRANDALL-SMITH: Miss Wanda Crandall, and William Synnott, December 31 in Oklahoma City. Phi Sigma—Pi Sigma. They will have their home in Springfield, Illinois.

WILKINS-COCHRAN: Miss Mary Katherine Maguire, and James Graham, April 19 in Oklahoma City. Pi Beta Phi. They will make their home in Springfield, Illinois.

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