Clinic of Our Times
The Alumni University

MATHEMATICS AND
ESTHETICS

By Nathan Altshiller Court

A LADY of my acquaintance, a very
cultured person with literary pro-
divities, asked me once whether mathe-
maticians see beauty in their science.
During her school career she has heard
her teacher of mathematics, whose sub-
ject, by the way, she enjoyed very little,
refer to a theorem as being beautiful, and
this statement seemed to her very prepos-
terous. I do not remember in what words
I replied to her question. But I could
have quoted those masters of thought
who spoke eloquently on the subject.
Henri Poincaré (1854-1912), one of
the greatest minds of all times, said in this
connection: “Above all, adepts find in
mathematics delights analogous to those
that painting and music give. They ad-
mire the delicate harmony of numbers
and of forms; they are amazed when a
new discovery discloses to them an un-
looked for perspective, and the joy they
thus experience has it not the esthetic
character, although the senses take no
part in it? Only the privileged few are
called to enjoy it fully, but is it not so
with all the noblest arts?” Our distin-
guished contemporary Bertrand Russell
said: “Mathematics, rightly viewed, pos-
sesses not only truth, but supreme beauty
—a beauty cold and austere, like that
Of sculpture . . . The true spirit of delight,
the exaltation, the sense of being more
than a man, which is the touchstone
of the highest excellence, is to be found in
mathematics as surely as in poetry.” Let
me add just one more quotation, this
time from an American, Thomas Hill.
“The mathematics is usually considered
as being the very antipodes of poetry.
Yet mathesis and poesy are of the closest
kindred, for they are both works of im-
agination.”

For the initiate mathematics has very
much in common with the fine arts.
On the other hand, the fine arts are great-
ly indebted to mathematics. To achieve
rhythm the poet must count the feet in
his verses, i.e. the regularly recurring metrical units. The words in a verse
must be placed in measured and cadenced formation so as to produce a metrical ef-
fect.

The rôle of mathematics in music is a
far more intimate one. Several centuries
before our present era Pythagoras observed
that when musical strings of equal length
are stretched by weights having the pro-
portions of 1-2, 2-3, 3-4, they produce in-
tervals which are an octave, a fifth, and
a fourth. Ever since that time mathe-
maticians have greatly contributed
towards the elaboration of the theory of
music. Euclid, the author of the famous Elements, wrote two books on the theory
of music. When the music of the an-
cients, the homophonic music, gave way
to the polyphonic music of the middle
ages, mathematicians have furthered its
theoretical development. The rena-
sance has witnessed the birth of our mod-
ern, harmonic music, and among those
who contributed towards the study of its
theory we find such names as Kepler,
Descartes, Huygens.

The close connection between mathe-
matics and music has been expressed by
Helmholtz as follows: “Mathematics and
music, the most sharply contrasted fields
of scientific activity, and yet related, sup-
porting each other, as if to show forth
the secret connection which ties together
all the activities of the mind, and which
leads us to surmise that the manifestations
of the artist’s genius are but unconscious
expressions of a mysteriously acting ration-
ality.” Leibnitz is even more specific.
“Music is a hidden exercise in arithmetic,
of a mind unconscious of dealing with
numbers.” The love of mathematicians
for music is a well established fact. The
great contemporary mathematical genius
Albert Einstein is an excellent violinist.

Sculpture, architecture, painting, and
the graphic arts in general obviously in-
volve metric considerations. What geo-
metric constructions artists have used,
consciously or unconsciously, to achieve
their esthetic effects, have been well an-
alyzed and put clearly into evidence. The
lack of space does not allow me to enlarge
upon this very interesting subject. I
shall simply mention that one of the most
telling esthetic effects is obtained by the
so called “Golden Section” and its de-
rivatives, and this section is connected with
the quadratic equation $x^2 + ax = a^2$
Those interested in this subject may con-
nult: (1) Jay Hambridge, Dynamic Sym-
metry; (2) L. D. Casken, Geometry of
the Greek Vases; Matilda C. Gyhka, Esth-
étique des proportions en la nature et
dans les arts. It is far from being a mere
coincidence that great artists like Leonar-
do da Vinci, Raphael, Michael Angelo,
Albert Durer felt a very great attraction
for mathematics. The great accumulation
of knowledge of our own day makes such
manifestations more rare.

If you, dear reader, do not belong to
the fortunate few who can discern beauty
in mathematics, you still may learn to
perceive mathematics in beauty.

THE ST. LOUIS MOVEMENT

By Charles M. Perry

SEVENTY-ONE years ago, in the
year 1858, two men met at a gather-
ing in St. Louis at which oriental
philosophy was being discussed. One of
these men was Henry C. Brokmeyer,
the other was W. T. Harris. Each of them
was to exert great influence in this coun-
try and abroad.

Harris was a New Englander. After
two and a half years at Yale he had
come west to teach in the St. Louis
public schools. Brokmeyer was of Ger-
man birth, having come to America at
the age of sixteen. After attempting col-
lege and later becoming imbued with
New England thinking, he had deter-
mined, Woodbridge Riley states, to
become another Thoreau, to leave society
and seek solitude. Carrying out his plan,
he had gone to the forests of Kentucky,
built a log cabin, and with only his dog
for a companion had supported himself
several years by hunting. Realizing,
however, that he must provide himself
a competency for old age, he had set
the wilderness to come to St. Louis, there
to begin the career which was incidentally
to make him lieutenant-governor of Mis-
souri. So the two men came together.
Harris was quick to recognize the genius
of Brokmeyer.

Brokmeyer told Harris that much of
the philosophy that the latter was reading
was wrong; that Cousin, for instance, con-
tradicted himself on every page; and that
the man that Harris should study was
the German philosopher Hegel. An
agreement was soon struck between them
that Brokmeyer should teach Harris and
two of his friends the philosophy of
Hegel. To accomplish this end Brok-
meyer undertook the translation of Hegel’s Greater Logic into English—the first
translation of this monumental work into
the English language. Thus was begun
what is known as the “St. Louis Move-
ment in Philosophy.”

When the Civil war came on, the group
was for the time being dispersed. But
no sooner was the war over than the
friends were again together. In 1866
Brokmeyer, Harris, Denton J. Snider, and
some few others formed the St. Louis
Philosophical society.

The scenes at the meeting of that so-
ciety can be easily pictured. Miss Sue
Beeson, the last survivor of the original
movement, tells in a recent letter to the
writer of her recollections of “those great
days." She recalls Brokmeyer, Harris, and Snider holding the floor on Paust or discussing some great speculative principle. Harris was the keen college professor; Brokmeyer, the man of genius; Snider, with his romantic shock of black curly hair, the beloved "writer of books."

It seemed to the participants of this movement as if they had found the key to the universe. The Hegelian philosophy gave them a principle of interpretation for every field of activity. They were interested in music, sculpture, literature, social organization, law, education. Having a comprehensive philosophy they took all knowledge for their province. It is easy to imagine how the members of the group aroused and sustained each other's enthusiasm and stimulated each other to activity. Though very systematic in method, the movement was in spirit romantic. The whole world became luminous with meaning for them; great things were about to be accomplished; each one felt in himself the presence of greatness.

Out of this formation of the St. Louis Philosophical society came later the organization of the Kant club, the starting of numerous classes, the founding of the Communal university, which is still in existence as the Snider association. But the most important outgrowth of the meeting was the establishment of two periodicals: the Journal of Speculative Philosophy, and the Western. The former was the first journal of its kind in the English language and was widely recognized both in America and abroad. It continued for twenty-two years.

The writings of the group covered a wide range of subjects. Harris, with his nearly five hundred published productions, treated Hegel, Dante, and numerous national subjects. He also had the editorship of Webster's Dictionary and of Appleton's series of school readers and was for several years United States commissioner of education. Snider wrote fifty-eight books on philosophical, literary, artistic and educational subjects. Susan Blow is known best for her books on the kindergarten, but she also wrote upon Dante. William M. Bryant was the translator of Hegel's Philosophy of Art. J. G. Woerner applied the Hegelian philosophy to administrative law. And there were several others who wrote less voluminously than those here mentioned.

The movement did not confine itself to St. Louis. The Concord School of Philosophy at Concord, Massachusetts, which had been started in 1879 by Bronson Alcott, was practically taken over by Harris, actively supported by Thomas Davidson, Snider, and others of the St. Louis group. The same coterie of men started philosophical activities in Chicago and Milwaukee also. G. H. Howison, a member of the original philosophical society for several years, though he was not wholly in sympathy with the Hegelian viewpoint, carried the influence of the movement far. After leaving St. Louis he taught at the Massachusetts Institute of Technology, in Harvard, and at Michigan, and finally went to the University of California, where, establishing the Philosophical union, he built up a great tradition in American thought.

In the history of American speculation the St. Louis Movement has to be given a place. A circumstance that brings it close to the Oklahomans is that it is the only development of similar magnitude and character in the Southwest and its founder, H. C. Brokmeyer, once lived at Muskogee when he was legal counsel for the M. K. and T. railroad. Though foreign in its inspiration, the Movement is indigenous in spirit. It is comparable with the Scottish Realism at Princeton and Transcendentalism in New England as one of the major developments in American philosophy.

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INDIANS! THE OPPORTUNITY FOR OKLAHOMA

By Matrice G. Smith

WHEREVER Oklahoma is known, two things are associated—oil wells and Indians. Oil has of course been of paramount importance in the development of the state, but it must not be forgotten that Indians were here before oil wells, and that our Indians lived in all parts of the state, while derricks do not. Our oil resources have been well developed, and there is every reason to believe they will be carefully safeguarded in the future, but our Indians have often been overlooked.

To the students of men and their cultures and everyone who is interested in men and cultures is an anthropologist—Oklahoma offers a great wealth of opportunities. This wealth has been tapped somewhat by our own people, and by others from all parts of the country, sometimes even surreptitiously. But the number of Oklahomans interested in the Indian past of this state can be greatly increased. Such an increase in interest will come as a natural increase in the value of materials everywhere about us.

It is regrettable that the pioneers, who knew the Indians as they were before they lost their cultural identity, had no time to study them. Pioneers are busy establishing homes, struggling with Mother Earth, trying to make both ends meet. Pioneers cannot be students of the culture of other people; they are too busy creating their own. In all the western states, consequently, the early settlers neglected many things of value and of interest.

Now, however, the situation is different throughout the west. The children of these sturdy courageous men and women are becoming interested in the history and the traditions of their region. And they are realizing that the history of the west must always include the story, the true story, of the Indians and their ways of life.

In recent years, therefore, there has been an increasing amount of attention paid to the Indians. Many western states, particularly southwestern states, have recognized the cultural and other values inherent in Indian civilization. There is no reason why Oklahoma should not be among the leaders in this movement to interpret and reinterpret our native peoples to the descendants of our pioneers.

Indeed, there are good reasons why Oklahoma should be ahead of most other states. We have many tribes of Indians within our borders, representing different types of native life; for Indians differed among themselves as much as did Europeans. Some of our tribes have been here a long time, but others have been here, relatively, only a short period, and still contain many older individuals who are repositories of the ancient ways of life. We have among ourselves, many persons who have seen nomadic, hunting tribesmen become members of settled communities. We not only have Indians in Oklahoma, but we have men and women who know Indians sympathetically.

From the viewpoint of the anthropologist there are at least two approaches to the material which exists in the state. The first is archæological. There are an unknown number of villages, camp and burial sites of our Indian tribes in all parts of Oklahoma. These sites yield not only the familiar arrowheads but also many tools, implements, weapons, and objects of ornamentation and art. Such archæological work teaches us how our natives lived, particularly concerning their material culture. There remains a vast amount of work to be done in finding and excavating sites.

But archæology is only one phase of anthropology. Anthropologists are also students of the spiritual, the non-material, aspects of culture, the customs and manners of the Indians before they took over our ways of life. There are many unanswered questions concerning these topics, and wherever there are Indians there is usually some unwritten information. Such ethnological data must be gathered before the old men and women of our tribes die out, for unfortunately many of them will take their knowledge with them.

The gathering of ethnological and archæological information is thus of great scientific importance. It will give us the aboriginal history of Oklahoma. It will complete the, as yet, unfinished portraits... (Turn to page 64, please)
When a high school football team defeated our university

C. Ross Hume, '98, recalls start made by varsity in athletics

GRID-IRON MYTHS

I join the throng, the Boomer-band,
Who now are lining-up;
I hear the "Voice of Sooner-land,"
Say, "Friends, today we'll win.

The crowd, the yells, the plays, the cheers,
All pass in swift review;
Then I go back for thirty years,
And early scenes renew.

The field, the teams, the games, my mates,
And grid-iron myths of yore,
Come rushing in; I’ll now relate
This O. U. football lore.

—Criss Cross.

In the early nineties, Criss Cross was probably the first cub reporter on the campus. One lone publication, the Umpire, published semi-monthly was the sole source of school news, so he wrote the “University Notes” for the Norman Transcript. Out of that dim past he has stepped to tell some of the early incidents that are forerunners of football traditions known to all of you in the midst of this season of sport.

In the fall of 1895, John A. Hart, a former halfliner from Winfield college came to Norman and proceeded to organize and coach the first team. No other student had ever seen a game, and in his mad rush he developed a "charley-horse," just before the first and only game of the season. The field was west of the fine building, and one in a field just west of the campus, in both of which the university was successful. Ray Hume was captain, and Criss Cross was quarterback. In the fall of 1896 some students organized the team and played two games with Norman high, one at the high school building, and one in a field just west of the campus, in both of which the university was successful. Ray Hume was captain, and Criss Cross was quarterback. In the fall of 1897 the late Prof. V. L. Parrington came to the school, and beside his work in English became head coach. He developed the first real college team. C. C. Roberts was captain, and others were Ford, Mackey, Holder, Howell, the Merkles, Barrow, and Clapham. The first game avenged the sting of Oklahoma’s former victory. About five games in all were played, Kingfisher college, Arkansas City, and Fort Worth being among our rivals.

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The team of 1898 played about six games, and as I recall the three center linemen weighed about 660 pounds, so there were giants in those days. The team of ’99 was the last during my campus days. Temporary bleachers were made for that year, all the games to that date having been played in the northwest corner of the campus. Each team became some better as more men knew the game and larger enrollment gave more material to work with.

In 1903, I saw the first game with Kansas at Lawrence when Chester Reeds was captain, and that was the last time I ever acted as linesman. I was studying law there, and ever since have tried to attend Sooners-K. U. games.

About every other year I averaged a game at Norman until I began to return on Dad’s day, during the past four years. I recall the first home-coming game in 1915, and after that I secured a history of the yell and colors which appears in the 1916 annual, duly certified and verified for future use.

This is the thirty-fifth annual football season and the fifteenth Homecoming, and I’ll try again to be in the bleachers. The first seeds planted by Hart in the hearts of that early student body took deep root, and as we see the growth in efficiency of the team, and enthusiasm of the school we wonder what can be ahead of us. We have watched the wires, stretched along the sidelines to keep out a few, develop into the modest bleachers with hundreds, and grow into the stately stadium with its thousands, and realized that this has kept pace with other school activities. Other alumni and former students have the same longing which might be expressed.

When to distant lands we roam,
And we hear our college home
Calling us again, we’ll come
To Dear Old Oklahoma.
Oklahoma, Here we stand;
Oklahoma, Boomer-band,
Oklahoma, Sooner-land,
Oh, You, Oklahoma."

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CLINIC OF OUR TIMES

(Continued from page 59)

we have of many Indian tribes. It will add to our knowledge as to the processes of culture.

But the values to be secured are even greater than these scientific matters. We will better appreciate the folks who preceded us as we understand them. We will learn that not all primitive peoples are savages. We will realize the great things which these unlettered, but intelligent, people accomplished with rude facilities. And we will undoubtedly discover that we still can learn many things from the Indians as important as the growing of corn or the smoking of tobacco.

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OFFICIALS

Officials announced for the football games to be played in November are:

Iowa State at Norman November 2—E. C. Quigley of St. Mary’s, referee; Dwight Reams (Washburn), umpire; Carl Jones (Arkansas), head linesman.

Kansas at Norman November 9 (Homecoming)—J. C. Grover (Washington), referee; Jones umpire; Leslie Edmonds (Washburn), linesman.

Oklahoma Aggies at Norman November 23—Edmonds, referee.