THE LIMITS
OF
KNOWLEDGE.

THESIS
For Degree of B.L.

* Emma T. Jones *

I. S. U.,

1885.
"But knowledge to their eyes was ample space.
Rich with the spirit of time did new unfold.
That eminent man, Dr. Chalmers, professor at the University
of Edinburgh, once said: "The true modern philosophy now makes
more characteristic exhibition of itself than at the limit which
separates the known from the unknown.
Man tracts of his achievements in science. He has penetrated
far into her deepest recesses but many a secret casket lies
yet unexplored. Restless scholars continue ever to grasp at the
skirt of the unknown but as soon as the garment is
possessed, no find that its occupant has flown.
Study and research are handable in all but there is much
that can now be revealed to man. "Truth is stranger than
fiction" and when men have ceased speculating and have
acquainted truth in its fullest extent, we shall have attained
to Omniviscence itself and shall have passed beyond
the pale of humanity."
To know that we cannot know certain things is in itself the most positive knowledge and is knowledge of the most safe and valuable nature. To delineate the boundary of knowledge is a source of great value to the cause of science and none need be ashamed to contribute to that work.

Nothing will as vividly exhibit one's intellectual research as as portrayal of the line that separates actual knowledge from theory and hypothesis.

It shall be the aim of this thread to point out a few of these dividing lines. To show how many familiar phenomena are incomprehensible and by this prove that man's ignorance is greater than all his wisdom.

We shall begin upon this scale, viz: That the limits of the finite world are also those of human knowledge. To accept the doctrine of revelation as a source of wisdom, but that shall not be entered into here. It is only in the finite world that man's mind can fully
grasp the facts that come under his observation, examine them in all their different aspects and discriminate their different relations, and laws. Once step outside of this enclosure, came to the object of our attention smaller only of the infinite and behold, how powerless we are to move from its relentless hand. The secret it grasped therein. In the opening of his great work the Novum Organum, Francis Bacon points out our proper position as learners in the world of nature. He says: "Man, the servant and interpreter of Nature, can do and understand as he has observed concerning the order of Nature in outward things or in the mind; more he can neither know nor do."

If observation and experiment then, alone are to be the test of all our knowledge, alas! how limited much it be for how much necessarily lies beyond the possibility of such proof.
We shall look first into the forces of nature
Silent and unseen, except in their effects, what a poor
lack behind their arousal!
But what is force? Webster gives us one definition:
"Strength exercised without law." But what is "strength" and
what is "law"? We see both exercised in very day occurrence
but how limited our acquaintance with either.
Force acts only upon matter, through the medium of natural
things, but matter of itself is passive and must unite
animated by that strange and subtle agent, Force.
As the thing acted upon is clearly identifiable, likewise
the power that had caused the action must be separable
from the thing acting and consequently be as clearly definable,
but how curtailed our knowledge of the agent itself.
We have only its results from which to study. We know
nothing of its cause in isolated form.
What man would attempt to explain the process by which the seed becomes a plant?

We know that under certain conditions of heat and moisture the germ develops into life but of the magic hand that dept the ovule of the germ cell we know nothing.

In the darkness of mystery Nature accomplishes her work.

Again in the vegetable mold what power, inexplicable by all natural law, regulates the distribution of the fruitage of the kingdom so that "men gather not apples of Thorns nor figs of Thistles."

Or by what law are the multiform dints and perfumes of the floral kingdom confined to their various and separate specimen so that the fragrance of the rose never becomes attached to the pink nor the magnificent color of the dahlia to the pure white water lily?

Again the voice of Nature is silent.
Come to the chemical laboratory. Here are the elements in an infinite number of combinations. We plunge at once to the bottom of our investigation.

We are down among the atoms and the molecules. In our experiment we know that the atoms of this molecule have had a stronger affinity for the atoms of that molecule than those of the former have had for each other. What a breaking up has ensued! The old atoms have parted friendship, have rushed into the embrace of the new acquaintance, but the cause of the new form in which they both united appear, whether the same as in former life, can be explained by no atomic theory nor molecular hypothesis.

Scientists reason on the grounds of affinity or attraction. They say that certain kinds of matter have an affinity for certain other kinds of matter, that this affinity varies in different substances. The elements separately
combined with other matter, may have such a strong affinity for each other that, under certain conditions, each will break away from the old combination in order to unite with each other. The stronger mutual affinity then, causes the latest combination, but this does not explain the underlying principle of combining force. Why do these matters attract matter at all, is the real inquiry. The depth to which this question leads us, shows that we have only touched the surface of investigation.

Newton forced the scientific mold from the tyrannical chains of her movements when he discovered the law of attraction but neither Newton nor any other philosopher can ever explain that strange inherent quality of matter called Attraction. The law that holds the universe in equilibrium, with its mighty member dash on in dizzy circles through
as seen by ages, was new means to be understood by man for that mysterious, immaterial agent is Omnipotence itself and finite man need new expect to grasp in his infant strength the realm of the Infinite Light, Heat and Electricity, what a mystery encircles this Isis of Nature's nobility.

It would only be repeating a well known fact to declare how little we know of these forces in themselves. The undulatory theory of light is now generally received among scientists but its acceptability does not establish its truths by any means. There are many objections to the theory and until such are all removed we can have no definite knowledge as to what light really is. We know that in some subtle way it must be connected with heat and the two combine in the phenomena of electricity.

Light and heat may be due to the vibrations of matter...
but how futile our attempts to conform the same thing

To the action of the electric currents in all their capricious

phenomena. Man indeed may pluck the thunderbolt

from its native home and cause it to rend his pinion.

Thousands of miles away from the scene of action

by the aid of the magic sparks, he may set in

motion acres of marine machinery as was exemplified

at the opening of our present International Exposition

and yet when called upon to answer the question

"What is electricity?" he only makes reply.

Truly, the limits of science are as wonderful as its achievements.

But it is in the realm of Astronomy that all the

curiosity and longing of human nature must

remain unsatisfied. The astronomer looks up in the sky with

his telescope and looks out upon the brilliant, burning orb

only to exclaim: "Twinkle, twinkle, little star,

How I wonder what you are."
Nothing but the bare elements of motion, magnitude, and number are revealed to us, no clue as to the relation they sustain to us, their destiny or their origin.

Dares when we have turned the eye of our instrument toward the members of our own solar system and in particular to the planet Mars, as like our own Earth, what a rush of imaginative and speculative thought. The busy brain does bring, like so unlike ourselves, people that distant world and if so, are they indeed born only to die and do the good and evil deeds there stern for mastery? Thus imagination soar in wildest flight until the voice within speaks calmly to the restless soul: "What thou knowest not now thou shalt know hereafter." For now we see through a glass darkly but then face to face.

Opticians tell us that one now knows as much concerning
The world around us as probably can be known through any assistance that instruments can furnish us. Difficulties unavoidable will accompany the use of enlarged lenses so that we have about reached the limit of the utilizable telescopes.

The aided human eye has penetrated as far as its organization permits. It pierces on further, not for want of light but because its power and natural force has attained its limit.

The minds know that there are spaces beyond that which the eye traverses but the eye penetrates them not. This is an image of what happens to the minds itself when contemplating and studying the universe. It reaches a point where its clear sight.

That is to say its positive appreciation, halted, not that it finds there the end of things themselves but the limit of man's scientific appreciation of them.
Other realities present themselves to him, he has a glimpse of them, believed in them spontaneously and naturally, but it is not given him to grasp and measure them, yet he can neither ignore nor know them, neither have positive knowledge of them nor refrain from having faith in them.

In confining the limits of human knowledge to the limits of the finite world, I do not mean to speak of the material world alone. There are moral and intellectual facts which fall under observation and enter into the domain of knowledge.

"Know thyself" needed no more to be written on the door of the Temple at Delphi than it does to be emblazoned above the threshold of every Temple of Learning at the present time. Self-Knowledge is by far the highest wisdom in man.
attain but the path to this goal is beset with many
obstacles and the object of endeavor is never reached at
last. Materialists and non-materialists clog the
pathway and no fall and the stumbling blocks some
of us alack. men to rise again.

Psychologists differ as widely as the East from the West
and in the tangled maze of discussion, one loses
his way.

Take, for example, the long-disputed question,
"What is life?" Physiologist and psychologist,
alike, bow in humble ignorance before the simple
interrogation and the first principle of self-knowledge
is lost in the whirlpool of dispute.

Whether life is the result or cause of organization
can be provide only after m shall have put off
the robe of flesh and "This moral shall
hast put on immortality."
But if the limits of the finite world are those of human knowledge, they are not those of the human soul.

Man contains in himself ideal and ambitious aspirations, extending far beyond and rising far above the finite world. He poses ideas of and aspirations toward the infinite, the ideal, the perfect—the eternal. He reaches out his empty arm to grasp the reality only to find that he has clutched at empty air. But disappointment discouraged him not. Not for a moment can he rid himself of the thought that somewhere there are better things for him and only the infirmity of his actual condition prevents his rising to his ideal state of existence.

Lured by hope and impelled by ambition, that innate spirit of unrest breaks the bounds of
The finite world and looks far beyond the limits of its natural vision. With the eye of faith it pierces the veil which separates temporal from spiritual things and longs for the time when, unfiltered by this mortal dust, "we shall know as we are known". When naught shall be concealed from this knowledge loving soul. It would certainly be Heaven itself to wander through all the mysterious labyrinths of God's unrevealed knowledge.

So vast indeed are these, the rhinoceros of eternity alone, could prevent the perfect satisfaction of this knowledge seeking mind.

Can it be possible, then, that man, the only useful creature in all the world of life, the highest of all created beings, must go mourning all his days, longing, yearning for that which seems denied to him?
The little sparrow finds the want of its aerial nature and in the wings which lead it aloft. The fish finds its fin adapted to the element in which it lives. The animalculae, even, are organized exactly to suit their condition in life and shall man God's motherwork, all life long, seek for that which he finds not. God has given to man what man can never conquer. To explain to man what He has done would necessitate the elevation of man to a plane of existence where all the natural laws and methods are inapplicable. While man's mind is soiled by the fiend of humanity, the language of the Infinite could not be intelligible to him; for, undoubtedly, within the celestial realm of Thought, new laws of reason govern the intellectual faculties.
Once this difficulty, God triumphs in revelation, where we are given, not reason, but the bare facts we are able to comprehend.

We see then how even God, Himself, is limited. He cannot make us at once both human and divine. His plan is to lead us on to higher and higher achievements and, lest we be dazzled by the glory of this revelation, He kindly hides from us the sudden light of His magnificent.

If man possess longings toward the Infinite, it arises from the sublimity of his nature. He is not responsible for the feelings implanted within his own breast.

The love of knowledge is not daunted by its limits but grows stronger as the barrier between the known and the unknown grows more perceptible.
Humanity is beginning to realize that "the fear of the Lord is the beginning of wisdom," the end is not to be reached here.

Be not then, impatient, oh my soul; thy feet shall soon be cast.

Soon shalt thou be loosed from this prison house of clay and thou shalt be satisfied when thou art awake "in His likeness."