After receiving a Ph.D. in physics from the University of Michigan in 1946, Dr. Richard G. Fowler sifted through the offers from several colleges and universities and decided on the University of Oklahoma.

He was drawn here chiefly by the reputation of Dr. J. R. Nielsen, who was one of a handful of the world's physicists doing research in the field of infra-red spectroscopy. Dr. Fowler had learned of Dr. Nielsen's work through scientific journals and from the academic grapevine which winds among universities. He was interested in working with the renowned physicist, and when an offer came to teach at Norman, he accepted eagerly.

Upon arriving at the University, Dr. Fowler found conditions less than ideal. Dr. Nielsen, a pioneer in his field, was also having to blaze trails at the University in order to get his work done. Operating with little space and practically no funds, Dr. Nielsen was struggling to keep his project going. If the professor had any notions of an ivy tower, he was finding it difficult to get any ivy, much less a tower. The administration was doing its best, but there just wasn't enough in the coffers. The physics department had an annual travel budget of $100 for its eight members, so going afield in search of supporting funds was impossible.

Lack of room to work was another handicap. A heat tunnel in the basement of the administration building had been converted into a laboratory of sorts. A corridor in the same building had been walled off to give Dr. Nielsen another room.

To complicate matters further, Dr. Fowler found that Dr. Nielsen had only one instrument with which to work. Two scientists trying to carry out experiments on one piece of equipment is like two cooks on the same stove. It's difficult for either to get anything done.

The problem of finding room to conduct research had been eased with the construction of the present physics building in 1948, and Dr. Fowler decided to strike out alone in another direction. At Michigan Dr. Fowler's doctoral thesis had dealt with gaseous electronics, the way electricity behaves when it passes through a gas; research in this field has given us such practical things as neon and fluorescent lights and today is critical in the exploration of space.

In 1944 Dr. Fowler had read about an experiment conducted by a physicist in England who had described a "very curious phenomenon." He had observed that when electricity is passed through a gas very quickly, the gas expands away as a flame. Dr. Fowler felt that the Englishman had given improper reasons for what had happened and decided to duplicate the experiment to discover what really had occurred.

A series of fortunate accidents then combined to lead Dr. Fowler and the two graduate students he had enlisted into virgin territory, to be first in an unexplored region.

In attempting to imitate the Englishman's experiment, limited funds, or to be blunt, poverty ironically played an important part in the discovery of the new path. Dr. Fowler and his assistants built the simple, inelegant device which is pictured on this page, at bargain store prices. It fell short of being an exact replica of the Englishman's apparatus. Another graduate student was called upon to blow a glass tube. The student was an incompetent glass-blower, and the tube didn't follow the specifications necessary to duplicate the Englishman's tube. As a result, the gas behaved differently, burning in bursts like roman candles. What was observed was unexpected, titilating. Through chance, Dr. Fowler and his students had stumbled upon a fork in the road. Their intended route was a well traveled one; the other veered off toward the unknown. Like good explorers, they headed for the virgin wilderness.

Money is needed for a successful expedition, and the need for support soon became crucial, even desperate. When the University was unable to provide the needed funds, Dr. Fowler turned to a newly created government department, part of the Defense Department, whose purpose was to encourage the carrying on of vital research in the nation's universities. The department was the Office of Naval Research, created in 1948, from which the National Science Foundation later was patterned.

After he and his students had made a substantial investigation, Dr. Fowler, becoming expert in the art of fund-scrounging, dug up the necessary money to travel to Washington. There he made a presentation to the ONR which was promising enough to merit a one-year appropriation of $5,000. This grant elated the researchers and enabled them to push on with renewed confidence. Later, at a national conference...
meeting of physicists, Dr. Fowler was able
to impress the ONR further with his re-
sults so that money was provided to buy
a much-needed oscilloscope to replace the
outdated equipment previously used.

Later another discovery overturned an
incorrect concept about electrons which had
been accepted for years. For more than a
decade the Office of Naval Research con-
tinued to back the research with increasing
support. Dr. Fowler finally has been able
to return to the fork in the road where he
made his turn nearly 10 years ago and
travel down that intended path, too.

Today 12 government laboratories, 10
corporations and a like number of univer-
sities are conducting research with appar-
ratus which has grown from the patterns
developed at O.U. The competition is now
severe, but the University is continuing as a
leader.

The University in the past two decades
has grown in stature as well as in size.
Much of its growth in prestige can be
attributed to its increased support of research.
The title of research professor has been
created. Appointed by the regents, these
men are encouraged to devote more time
to research—experiments, studying and
writing. The research professor is a faculty
member who has made distinguished con-
tributions to knowledge and has demon-
strated over a period of years vigorous
leadership in his field of interest.

Says Dr. Fowler, who became a research
professor in 1960: "Research does impor-
tant things for a university. It is one of the
functions of a university, and it’s the thing
which marks the distinction between a
university and a college. Both colleges and
universities teach. Both are custodians of
the knowledge of the past, and both trans-
mit such knowledge to people. But the uni-
versity is also charged with a second re-
sponsibility and that is to add to knowl-
edge, to serve as a spring of learning and
to discover the things which will be taught
tomorrow.

“The external function of research to a
university is that it provides the reputation
on which that university stands. Universi-
ties are recognized by each other not so
much on the fact they do good teaching
but that they do good research. If you say
this school is a great school, and you’re
speaking of a university, invariably you’re
speaking of the research activity of that
school. Very few are known purely for
their teaching.

“But research serves a very important
internal function: it keeps the faculty on
its toes, it keeps the members alive, and
therefore, it is very likely that where you
find good research going on, you will also
find good teaching going on, too. There
has been a tremendous growth in the at-
titude of our University toward research
in the last 20 years. I think that in this
period we have really come of age. We
have changed from a large college to a uni-
versity worthy of the name.”

Without research a graduate program
is impossible. While working on Dr. Fowl-
er’s original project 26 students have re-
ceived master’s degrees and doctorates. “A
strong research program attracts outstand-
ing teachers,” Dr. Fowler testifies. “We
have a lean, vigorous department, and good
research is the chief reason for it.”

Research here has attracted visitors from
abroad. “Since 1956,” says Dr. Fowler,
“more than 20 men from other countries
have come here to work with us. Innum-
erable others just pass through as visitors
who have heard that something interesting
is going on here. This always has a tre-
mendous impact on the students. It gives
them confidence. It makes them realize
that they really are a part of the scientific
community. They discover that scientists
are alike the world over and that they are
a part of that world.”

The physics department is but one Uni-
versity department engaged in research.
Creative scholars are emerging from many
schools and colleges. Whether it’s the dis-
covery of new knowledge or ways to bring
intellectual achievements into social usage,
research is the sort of intellectual activity
characteristic of a good university and es-
sential to it.—PAUL GALLOWAY

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### Research Professors

<table>
<thead>
<tr>
<th>Name</th>
<th>Department</th>
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<tbody>
<tr>
<td>Dr. Leonard R. Wilson</td>
<td>geology</td>
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<td>Dr. Maurice H. Merrill</td>
<td>law</td>
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<td>Dr. J. Rud Nielsen</td>
<td>physics</td>
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<td>Dr. Gilbert C. Fite</td>
<td>history</td>
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<td>Dr. Simon H. Wender</td>
<td>chemistry</td>
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<td>Dr. Richard G. Fowler</td>
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<td>Dr. Gustav E. Mueller</td>
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<td>Spencer H. Norton</td>
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<td>chemical engineering</td>
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<td>Dr. Cedonir M. Slimpovich</td>
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<td>Dr. Howard C. Larsh</td>
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February, 1964