

# THE FLINT RIVER OBSERVER

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## SMITTY'S SNIPPETS ...And Other Astronomy Quotations Collected Over the Years (But Never Used)

*EDITOR'S NOTE: Steven "Saratoga Smitty" Smith is a voracious reader of things astronomical. Over the years, he has amassed the largest personal library of astronomy books of anyone in FRAC.*

*Unlike the rest of us, however, Smitty doesn't simply read books and set them aside; instead, he marks significant passages and writes them down for future reference. Thus was born "SMITTY'S SNIPPETS," a continuing column featuring items of interest gathered from Smitty's reading.*

*Used thus far as fillers in the Observer, these items deserve, we think, a better fate than simply waiting to be placed into future editions as space becomes available.*

*What you'll be reading, then, are astronomy-related quotations, courtesy of Smitty, who has generously shared them with us. And because we'll never have enough space for all the other quotes that have been collected by yr. editor but never used in the Observer,*

*we're adding them to this 3<sup>rd</sup> Special Edition of the Observer.*

*No attempt has been made to arrange the quotations in any order other than by author.*

*If, in your own reading, you come across published statements in any phase of astronomy that are especially meaningful or interesting to you, by all means write them down and send yr. editor a copy. The only criteria we'll use in including them are that the statements should be relatively brief – not more than 150 words in length – and of historical interest, informational value or simply entertaining. We will, of course, credit you in the Observer for having submitted the quotation.*

*In sending quotes, please include the author's name, title of the book or magazine in which it was published, date of publication, and the page nos.*

*And remember, quotes taken out of the larger context of a chapter may be unclear to the reader unless you include details in parentheses (such as the first names and titles of people referred to in the quotes). Because you're directly quoting someone else, courtesy – and copyright laws as well – dictates that you copy published material exactly as you read it, with the exception of misspellings which can be corrected.*

**-Bill Warren**

\* \* \*

**(Timothy Ferris, on observing with Percival Lowell's 24-inch Clark refractor at Lowell Observatory: )** As the night wore on I got comfortable with the old Clark, which had become arthritic in over a century of use but still lived up to its pedigree. The clock-drive mechanism worked fairly well, although

it had developed a few flat spots where it would stall momentarily, allowing the planet to drift out of the field of view. The mechanical slow-motion controls were shot: To correct for guiding errors or to move from Jupiter or Saturn I simply manhandled the big telescope, pushing it around as one would a Dobsonian. When the original dome-rotating mechanism moved unsatisfactorily it was replaced for awhile by a strange system that involved pontoons floating in water. That failed, too, and for the past half-century the dome had been supported on a set of 1954-vintage automobile wheels and tires: When a tire goes flat, they jack up the dome and patch the tire. The three shutters that cover the dome slit originally were controlled by a rigging, like a sailboat's, but that approach remained in use only on the top slit, and the other two shutters now consisted of old electrically operated aircraft landing-gear doors.

-Timothy Ferris, p. 119  
*Seeing in the Dark*  
Simon & Schuster, 2002)

Thirteen constellations lie along the ecliptic – the twelve “signs” of the “Zodiac,” plus Ophiuchus, which astrologers ignore since they regard thirteen as an unlucky number. (In searching for what would turn out to be the planet Pluto, **Clyde Tombaugh** made some photos in Gemini while testing the telescope and camera assigned to him, but by the time he started searching in earnest at the next dark of the Moon, Gemini was far west of the meridian, so he began his survey in Cancer instead. Murphy's Law was in effect: Pluto was in Gemini. Tombaugh spent nearly a year working his way around the ecliptic...looking for the one

slowly moving point of light that could be a planet.

-Timothy Ferris, p. 208

Over forty constellations date back at least 2,200 years, to the time of the Greek astronomer **Hipparchus**, and were listed in his great star catalog. Those constellations were derived from even more ancient Chaldean and Babylonian star groups more than 4,000 years ago. Although the star catalog of Hipparchus (was) lost (in a fire that destroyed the library in which it was housed), a catalog – **Ptolemy's Almagest** – compiled in A.D. 150 -- has survived.

-Richard Berry, p. 3  
*Discover the Stars*  
Harmony Books, 1987

It is a pity, in an age of rockets and space telescopes, that so few people have a direct acquaintance with the stars. Learning the stars and following their nightly courses across the sky brings a deep satisfaction, a satisfaction born of familiarity with something both ancient and ageless.

-Richard Berry, p. 2

Let the memories and pleasures of the perfect nights carry you through those occasional nights that will, in retrospect, seem funny. After all, what do spilled cans of soda, forgotten star atlases, dead batteries, and lost eyepieces really matter when stacked against the glory of the firmament? Draw three deep breaths. Relax. Look around the sky and you will see your old friends, the stars, still shining overhead.

-Richard Berry, 1994

The next few years – the early fifties – were among the happiest of **(Allan) Sandage's** scientific life. He became the bomber-jacketed ace flying the 200-inch (Hale) telescope deeper and farther than even its builders had dreamed...

The Hale telescope was affectionately known as the “Big Eye” to the Pasadena astronomical crowd, but Sandage liked to think of it as a giant candy machine. “I was a kid in a candy store that was so magnificent, full of everything that you wanted, that it was life’s greatest carnival...”

He (Sandage) spent most of half of every month, the half centered on the new moon, when the sky is darkest and the blue-water extragalactic sailors of astronomy came out, yo-yoing between Pasadena and (the observatory on Mt.) Palomar.

-Dennis Overbye, p. 12  
*Lonely Hearts of the Cosmos*  
Harper Collins, 1991

Back when he was working for **(Harlow) Shapley** as a night assistant, trying to learn astronomy, **(Milton) Humason** had taken some plates (glass photo negatives) of the Andromeda Nebula, M31, and brought them to Shapley. On the other side of the plate from the emulsion, Humason had marked in ink a few pricks of light that he said might be variable stars. Shapley, who believed that the Milky Way was the entire universe and that the spiral nebulae were local whirlpools of gas, wiped the marks off as he explained why they couldn't possibly be stars.

“Shapley, having argued that the nebulae were not separate galaxies,” said **(Allan) Sandage**, “wasn't prepared to see the evidence that they were...”  
**(Edwin) Hubble** identified specks of light similar to the ones Humason had

found and that Shapley had erased... They were, in fact, a kind of star known as Cepheid variables.

-Dennis Overbye, p. 13

**(Edwin) Hubble** had ended his book *The Realm of the Nebulae* on a poetic and prophetic note. “Thus the explorations of space end on a note of uncertainty. And necessarily so. We are, by definition, in the very center of the observable region. We know our immediate neighborhood rather intimately. With increasing distance, our knowledge fades, and fades rapidly. Eventually, we reach the dim boundary – the utmost limits of our telescopes. There we measure shadows, and we search among ghostly errors of measurement for landmarks that are scarcely more substantial.”

-Edwin Hubble, quoted in  
Dennis Overbye, p. 14

Just for fun, **(Allan) Sandage** tried to calculate what a future astronomer living... say, 50 billion years from now, when the balloon of the universe was deflating, could see. “Those models are fantastically interesting,” he gushed, “because in the light travel time you see the universe at different times. If there's an oscillation, you can see out so far that you see back in time before the expansion stopped. So you can see some redshifted galaxies of great distances whereas the nearby ones are blueshifted. From the most distant galaxies, that information that the universe is contracting has not yet had time to reach you.” He exhaled. “Fascinating. So just as an exercise to keep myself off the streets, I did all those neat calculations

as an amusement. And they were all published.”

-Allan Sandage, quoted in  
Dennis Overbye, p. 15

One night (**Maarten**) **Schmidt** stood in the dome at Palomar while the telescope was turned to train on the then most distant known quasar...It was a cool fall evening, but he was lightly dressed for the observing ahead, in a bright red shirt and a sport coat. He said he preferred a little discomfort; it made observing more romantic.

-Dennis Overbye (p. 16)

(**Allan**) **Sandage** unveiled his discovery to the Pasadena astronomy community in an enthusiastic lecture at Caltech. In the audience was (**Fritz**) **Zwicky**, who had been saying for years in his private convoluted language that some of the blue objects were what he called “compact galaxies,” and in fact some of them had already been identified with large redshifts...After Sandage stopped speaking...he looked out expectantly. Zwicky slowly stood up and pulled himself to his full height. “So,” he asked, sneering, “vot’s new?”

The room was silent.

-Dennis Overbye, p. 17

When (**Allan**) **Sandage** got to Pasadena, the cutting-edge work at Mount Wilson as being done by **Walter Baade**, a little German who had joined the observatory in the Thirties...As a German (during World War II), Baade had been restricted from any role in the war effort and, in fact, from traveling more than five miles from his house. The observatory managed to get his

range extended far enough to reach the domes of Mount Wilson, however, and during the long blacked-out California war nights he mastered the 100-inch Hooker telescope as no astronomer ever had. With it he had made fundamental discoveries about the basic kinds of stars in the universe and their relationship to the structures and histories of galaxies.

-Dennis Overbye, p. 18

The sole Caltecher (California Inst. of Technology) doing astronomy was a tall, irascible naturalized Swiss named **Fritz Zwicky**, who had been trained as a solid state physicist. Zwicky was brilliant, but had so many ideas it was almost impossible for other astronomers to sort out the good from the off-the-wall. One of his major discoveries – that 90 percent of the matter in the universe seems to be invisible – was not to be taken seriously for forty years...He also proposed shooting artillery bursts over Palomar to make the air more transparent.

-Dennis Overbye, p. 19

He (**Edwin Hubble**) looked exactly like somebody who should be sending teams of astronomers out to measure the universe. He was a tall, handsome man with a noble boxer’s jaw in which a pipe was usually clamped. He dressed like an English lord, and an Oxbridge (sic) accent had somehow grown over his native Missouri tongue. He had a lawyer’s knack for making a visitor feel like a jury that had the full focus of his attention. One of his tricks was to sweep all the papers off his desk into the wastebasket with an imperious wave of the arm when a visitor walked in. After the visitor had left Hubble would be

observed picking through his trash  
looking for his papers again.

-Dennis Overbye, p. 21

It took mankind a long time to  
conceive the sky as a full globe. The  
Greeks seem to have had this idea first.  
Our friend from Chaldea (3,000 years  
ago)...thought that the stars, and also the  
sun, moon and planets, moved across the  
vaulted sky overhead, from east to west,  
and then crawled back along the flat  
underside of the earth disc, to rise again  
over the eastern rim of the disc, in due  
course.

-H. A. Rey, p. 28

*The Stars: A New Way to See Them*  
Houghton Mifflin, 1976 (3<sup>rd</sup> ed.)  
(Editor's Note: This book, by the  
author of the best-selling CURIOUS  
GEORGE children's book series, ranks  
very high among the best-selling  
astronomy books of all time. Published  
in 1952 and undergoing countless  
reprintings and editions, THE STARS is,  
in yr. editor's (and countless others')  
estimation, the finest beginning  
stargazing book ever written. Sorry  
'bout that, **Terence Dickinson**, but it's  
true: except for TV's **Jack Horkheimer**,  
no one has ever made the night sky come  
alive for newcomers to astronomy and  
stargazing the way Rey did in THE  
STARS.)

No matter what part of nature one  
studies – microbes or Milky Ways –  
there is a point where one begins but  
never an end.

-H. A. Rey, p. 108

Not surprisingly, the science of  
astronomy – astrophysics, actually – is

forbiddingly complex and requires years  
of professional training. But even  
astronomy as practiced by amateur  
astronomers lies very far from most  
people's everyday knowledge. For  
them, even finding Square One, let alone  
moving off it, is a big challenge.

Robert Burnham, quoted in

Terence Dickinson, p. 5

*Night Watch*, 2<sup>nd</sup> ed.

Toronto: Firefly Books, 2002

But stars were scarce in that part of the  
sky,

And no two were of the same  
constellation –

No one was bright enough to identify;

So 'twas with not ungrateful  
consternation,

Seeing myself well lost once more, I  
sighed,

“Where, where in Heaven am I?”

-Robert Frost (1874-1963)

As a pale phantom with a lamp  
Ascends some ruin's haunted star,  
So glides the moon along the damp  
Mysterious chambers of the air.

-Henry Wadsworth Longfellow  
(1807-1882)

*Moonlight*

The most incomprehensible thing  
about the universe is that it is  
comprehensible.

-Albert Einstein (1879-1955)

I have no special talents. I am only  
passionately curious.

-Albert Einstein

Imagination is more important than  
knowledge.

-Albert Einstein

You know how Einstein got bad grades in math? Well, *my* grades are even worse than his!

-Calvin ( of *Calvin and Hobbes* by cartoonist Bill Watterson), comparing himself to Einstein

Astronauts go to the moon, and what do they do? They collect rocks...lope around...play golf...and they plant a flag. With one giant step mankind took banality out of America and into the cosmos.

-Lily Tomlin

With how sad steps, O Moon,  
Thou climbst the skies!  
How silently, and with so wan a face!

-Philip Sidney  
*Astrophel and Stella*

What's so amazing, that keeps us stargazing,  
And what do you think we might see?  
Someday we'll find it, the rainbow connection,  
The lovers, the dreamers and me.  
-Kermit the Frog  
*The Muppet Movie*

Many of us find that to leave bright room and easy chair for the dark world outside is contrary to nature, like a moth flying from the light. As a bather plunges into cold water, so the sky hunter must immerse himself in darkness before he will find it comfortable in the night...So rich is this nocturnal wonderland that even for the smallest telescopes numerous objects await

observation...A larger lens or mirror is not an assured benefit. Devotion and patience are as important as light grasp.

-Leland S. Copeland  
*Sky & Telescope* (Nov., 1949)

Then outward turn an optic tube  
From some high, lonely hill,  
That we may glance at cosmic nooks  
And marvels rich, until  
The morning glow conceals those realms  
Where precious things distill,  
Far-forth beyond the utmost reach  
Of human hope and will.

-Leland S. Copeland (1949)

On Summer evenings, the Milky Way bounds the dooryard like a leafy hedge.  
Nebulas bloom like flowers.

-Chet Raymor

They toiled and built a thousand years  
In love's all powerful might.  
And so the Milky Way was made –  
A starry bridge of light.

-Topelius

Hardly is (Sirius) inferior to the Sun,  
save that its abode is far away and the  
beams it launches from its sea-blue face  
are cold.

Marcus Manilius  
*Astronomica* (1<sup>st</sup> cent. A.D.)

When in mid-course the Moon is full,  
then most of all do the princely  
luminaries (stars) shine conspicuous in  
the heavens...Then may one see the  
constellations immaculate in the open  
spaces of the sky; they neither bewilder  
us with their number nor move

unencumbered by a multitude of petty stars.

-Marcus Manilius

Deep sky is, of all visual impressions, the nearest akin to a feeling.

-Samuel Taylor Coleridge (1772-1834)

And when I discover that the forces of the heavens and the planets are within ourselves, then truly I seem to be living among the gods.

-Leon Batista Alberti

Thus shall you go to the stars.

-Virgil (70 B.C.-19 B.C.)

Hung be the heavens with black, yield day to night.

-William Shakespeare (1564-1616)

I am part of the sea and stars  
And winds of the South and North;  
Of mountains and Moon and Mars,  
And the ages sent me forth!

-Edward H. S. Terry

In all dimensions alike, upward and downward, throughout the universe, there is no end.

-Lucretius (99 B.C.-55 B.C.)

It is far more natural and intelligible to regard (the nebulas) as being not enormous single stars, but systems of many stars, whose distance presents them in such a narrow space that their light, which individually is imperceptible, reaches us, on account of

their immense number, as a uniform pale glimmer...And this is in perfect harmony with the view that these elliptical figures are just universes or...Milky Ways.

-Immanuel Kant (1724-1804)

The only way of discovering the limits of what is possible is to venture a little way past them into what is impossible.

-Arthur C. Clarke

We may mount from this dull Earth, and viewing it from on high, consider whether Nature has laid out all her cost and finery upon this small speck of Dirt.

-Christiaan Huygens (1629-1695)

The universe begins to look more like a great thought than a machine.

-Sir James Jeans (1877-1946)

Stars are the golden fruit of a tree beyond reach.

-George Eliot (1819-1880)

The moon never beams without bringing me dreams.

-Edgar Allan Poe (1809-1892)

I believe a leaf of grass is no less than the journeywork of the stars.

-Walt Whitman (1819-1892)

*Leaves of Grass*

The spaces of the universe...swallow me up like a speck; but I, by the power of thought, may comprehend the universe.

-Blaise Pascal (1623-1662)

Man hath weaved out a net, and this  
net throwne upon the heavens, and now  
they are his own.

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-John Donne (1572-1631)

Thus, beginning with vulgar  
astronomy, the first peoples wrote in the  
skies the history of their gods and their  
heroes. Thence there remained this  
eternal property, that the memories of  
man full of divinity or of heroism are  
matter worthy of history... And poetic  
history gave learned astronomers  
occasion for depicting the heroes and the  
heroic hieroglyphics in the sky with one  
group of stars rather than another...

-Giambattista Vico, 1725

What is man?

The Sun's light when he unfolds it  
Depends on the organ that beholds it.

-William Blake (1757-1827)

...Instantly a light upon the turf  
Fell like a flash, and lo! As I looked up,  
The Moon hung naked in a firmament  
Of azure without cloud.

-William Wordsworth (1770-1850)

At a single glance, I survey the whole  
Universe. He will never be happy, who  
such pleasures fail to please.

-T'ao Ch'ien