

STARLITE

THE JOURNAL FOR THE STOURBRIDGE AND DISTRICT A.R.S.



**G6OI
G6SRS**



ISSUE: OCTOBER 2020



G4CVH

**STOURBRIDGE & DISTRICT AMATEUR RADIO SOCIETY
INCORPORATING
OLD SWINFORD HOSPITAL SCHOOL RADIO CLUB**

MEETINGS NORMALLY HELD AT

**OLDSWINFORD HOSPITAL SCHOOL
HEATH LANE
STOURBRIDGE
[8:00 TO 10:00 PM]**

VISITORS ALWAYS WELCOME

**THE SOCIETY HOLDS ITS MEETINGS
EVERY MONDAY (INCLUDING BANK HOLIDAYS)**

RSGB AFFILIATED SOCIETY

STARLITE

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Or by Email to:-

honsec@g6oi.org.uk
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DY10 3ND

StARS Website URLs:-

www.g6oi.org.uk
<http://g6oi.ross-lewis.co.uk>

StARS Facebook Page:-

<https://www.facebook.com/groups/stourbridge.ars/>

Forthcoming Meetings

October 5 th	Club Net: 145.325MHz FM & Zoom Video. 8pm
October 12 th	Club Net: 145.325MHz FM & Zoom Video. 8pm
October 19 th	Club Net: 145.325MHz FM & Zoom Video. 8pm
October 26 th	Club Net: 145.325MHz FM & Zoom Video. 8pm
November 2 nd	Club Net: 145.325MHz FM & Zoom Video. 8pm
November 9 th	Club Net: 145.325MHz FM & Zoom Video. 8pm
November 16 th	Club Net: 145.325MHz FM & Zoom Video. 8pm
November 23 rd	Club Net: 145.325MHz FM & Zoom Video. 8pm
November 30 th	Club Net: 145.325MHz FM & Zoom Video. 8pm
December 7 th	Club Net: 145.325MHz FM & Zoom Video. 8pm
December 14 th	Club Net: 145.325MHz FM & Zoom Video. 8pm
December 21 st	Club Net: 145.325MHz FM & Zoom Video. 8pm
December 28 th	Club Net: 145.325MHz FM & Zoom Video. 8pm
January 4 th 2021	Club Net: 145.325MHz FM & Zoom Video. 8pm

Announcement From John Clarke M1EJG [Hon. Secretary]

Just a short note from your Secretary to all Club members.

We are, now, holding virtual Club nights each Monday evening on Zoom, starting at 8 o'clock. Any member interesting in participating, please contact me by phone or email [see *page 2 for these*] and I will give you the I.D. And password to get on the site.

There is, also, a StARS "Whatsap" site. If you wish to use it, please contact me for inclusion.

The Committee is doing all it can to keep the Society operating during this unusual period of Covid-19, which appears to be stretching, at least, into Spring 2021. This means that we must use all modern methods available to us to maintain the Society's existence and members' contacts until actual meetings can again be held.

Best Wishes to all members and let's hope that the Society comes through this testing period a stronger organisation.

John M1EJG [Hon. Secretary]

Editor's Comment

It has come to my attention that, due to work commitments, Tim G7TAC has, reluctantly, resigned from the post as StARS President. I'm sure we would all like to thank Tim for being at the helm for the past several years.

Alan M7ALS has agreed to step in as interim President, so our thanks go to him for fulfilling the rôle.

To follow on from the Hon Sec's note about virtual Club meetings on Zoom, please remember that there is the Club Net on 145.325MHz FM on Mondays at 8pm. You will be aware that not everyone has access to Zoom.

On the RSGB You Tube channel, I encourage you to have a look at the RSGB Convention Lecture 2018 "*The K3LR Super Station*". It is an interesting lecture and showed me why they heard my 2.5 watt signal through a crappy, low, half-size G5RV aerial on my first call! I believe Tim Duffy K3LR is a leading light at DX Engineering, perhaps the largest amateur radio "shop" in the USA, if not one of the world's largest.

If you have any news, reviews or articles for these pages, please send them to your Editor at:

g4xom@g6oi.org.uk

Brazil proposes end of all amateur radio exams

ANATEL, the Brazilian National Telecommunications Agency, recently published a public consultation, CP65, which is available at [this link](#)

In their website, LABRE, the Brazilian Amateur Radio League, was surprised by the CP65 proposal that proposes, among other topics, the extinction of the COER (amateur radio certificate) exam for all classes and replacement by free access to initial class C, as is done today with the Citizen's Band, as well as access to subsequent classes B and A upon presentation of the Certificate of Technical Course and Graduation in Telecommunications, respectively, or minimum stay of 3 years in each class.

In addition, the aforementioned proposal suggests ending the rules of different prefixes for each of the States of the Federation, remaining only the prefix per class and there would no longer be any special call signs.

The proposal, in addition to going against what is consensus in the international regulation related to the Amateur Radio Service, is absolutely contrary to the LABRE's thinking with regard to the minimum requirements to be a radio amateur and also does not match ANATEL's request for support from LABRE in the revision of amateur radio regulations in Brazil.

For further clarification on the subject, LABRE has already requested a meeting with ANATEL, which will be scheduled soon.

PR7GA

From Our VK Correspondent

This came from Jim G4WAO recently. He says "Contesting with a different slant on it". Apologies for the You Tube links, but I can't embed video in these pages!

I was Googling **IC705** and landed at this page : <https://3fs.net.au/shack-snacks/>

...a couple of interesting demo videos popped up in my YouTube feed:

ICOM IC-705 Ham Radio - Features and Modes Demonstration (HF, Digital, D-STAR, VHF/UHF)" on YouTube

<https://youtu.be/Jv4KOmm39bw>

and

Icom IC705, QRP HF Transceiver, one word explains this radio, "Spectacular"

https://youtu.be/Dck_IPexH2U

Personally, I'll wait for Yaesu's response HI.

Here is another one forwarded from Jim G4WAO



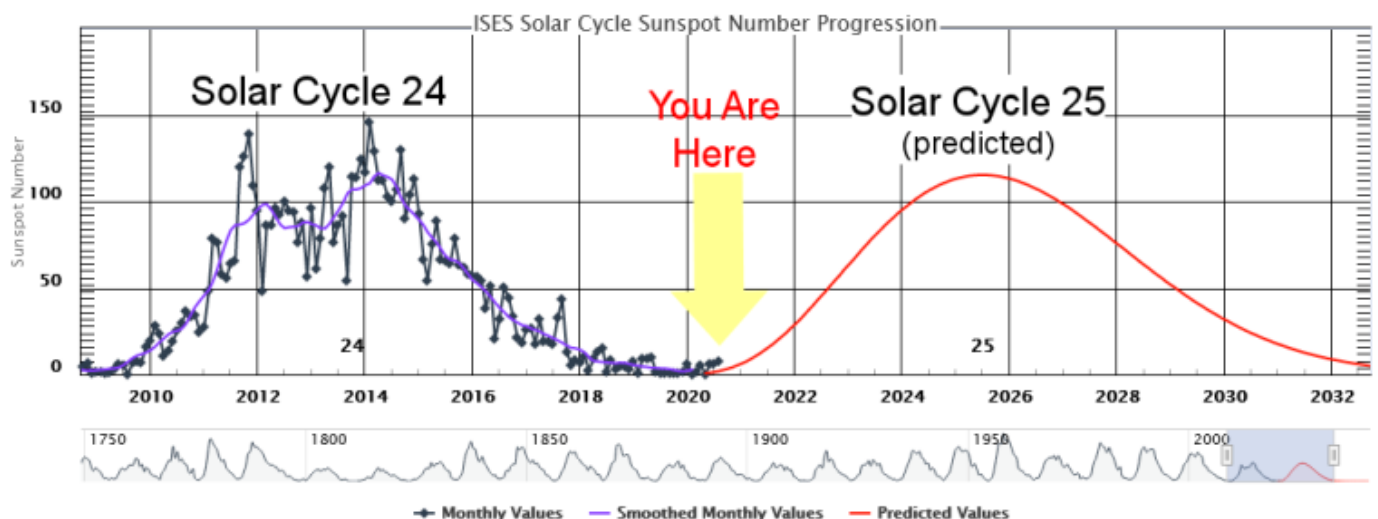
New QTC e-magazine

Download it from: <https://vkradioamateurs.org/qtc-e-magazine/>

Solar Cycle 25 Has Begun

SEPTEMBER 17, 2020 / DR. TONY PHILLIPS

Sept. 15, 2020: Solar Cycle 25 is officially underway. NASA and NOAA made [the announcement](#) during a media teleconference yesterday, Sept. 15th. According to an international panel of experts, the sunspot number hit rock bottom in Dec. 2019, bringing an end to old Solar Cycle 24. Since then, sunspot counts have been slowly increasing, heralding new Solar Cycle 25.



[Click here to view NOAA's interactive sunspot plotter](#)

“How quickly solar activity rises is an indicator on how strong the next solar cycle will be,” says Doug Biesecker of NOAA’s Space Weather Prediction Center, co-chair of the Solar

Cycle 25 Prediction Panel. “Although we’ve seen a steady increase in sunspot activity this year, it is slow.”

The panel believes that new Solar Cycle 25 will be a weak one, peaking in 2025 at levels similar to old Solar Cycle 24. If their prediction is correct, Solar Cycle 25 (like Solar Cycle 24 before it) will be one of the weakest since record-keeping began in 1755.

“While we are not predicting a particularly active Solar Cycle 25, violent eruptions from the sun can occur at any time,” warns Biesecker. Indeed, even [Solar Minimum can produce a superstorm](#), so Solar Cycle 25 should not be taken lightly despite the panel’s low expectations. Radio blackouts, power outages and severe geomagnetic storms are possible in the years ahead.



Above: Solar Cycle 25 auroras photographed on Sept. 14, 2020, by Jani Ylinampa in Finland.

For now, solar activity should remain generally low. Sunspot counts still have a long way to go before they reach levels typical of Solar Maximum. For the rest of 2020, periods of quiet will be occasionally interrupted by minor solar storms, with only a slight chance of big events.

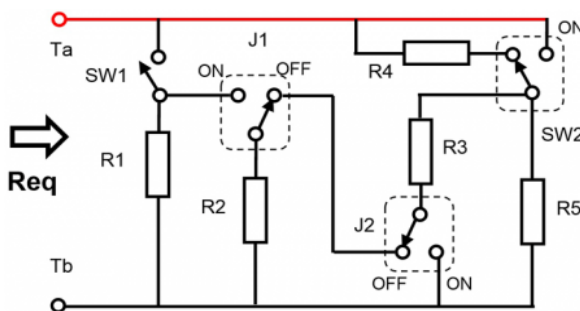
On the bright side, [the first Northern Lights of Solar Cycle 25](#) are dancing around the Arctic Circle right now, and the coming season for aurora watching promises to be the best in years. Stay tuned! **Aurora alerts:** [SMS Text](#).

Build your own resistor load bank

by Dan KB6NU

I've written many blog posts about power supplies and electronic loads for [AMETEK Programmable Power](#). This has been interesting to do, and I've learned a fair amount about power supplies and electronic loads. So much so, I'd really like to get an electronic load of my own. The only problem is that they're still a bit out of my price range.

A couple of days ago, though, I ran across the article, [Versatile Multistep Resistor Load Bank is Simple and Modular](#) in [electronic design](#). It's a relatively simple design that consists of a number of resistors and switches, as shown in the figure below.



R1 – R5 are all the same value, and in this configuration, you can realize 12 different values, from $R/4$ to $2R$. Here's how you would set the switches to get these resistance values:

SW1	J1	J2	SW2	Alt	Equations	Alt Equation	Factor	Req Ω
OFF	ON	OFF	OFF		$R4 + R5$		$R/0.5$	2000.0
OFF	OFF	OFF	OFF		$R4 + \{(R2+R3) \parallel R5\}$		$R/0.6$	1666.7
OFF	OFF	ON	OFF	0 1 1 0	$R4 + \{R3 \parallel R5\}$	$R4 + \{R3 \parallel R5\}$	$R \times 1.5$	1500.0
OFF	ON	OFF	ON		$R5$		$R/1$	1000.0
OFF	OFF	OFF	ON		$R5 \parallel (R2+R3)$		$R/1.5$	666.7
ON	OFF	OFF	OFF		$R1 \parallel (R4 + (R5 \parallel (R2+R3)))$		$R/1.6$	625.0
ON	OFF	ON	OFF		$R1 \parallel (R4 + (R3 \parallel R5))$		$R \times 0.6$	600.0
OFF	OFF	ON	ON	0 1 1 1	$R3 \parallel R5$	$R3 \parallel R5$	$R/2$	500.0
ON	ON	OFF	OFF	1 0 0 1	$(R1 \parallel R2) \parallel (R4 + R5)$	$R1 \parallel R5 \parallel (R2 + R3)$	$R/2.5$	400.0
ON	ON	ON	OFF		$(R1 \parallel R2) \parallel (R4 + (R3 \parallel R5))$		$R \times 0.375$	375.0
ON	ON	OFF	ON	1 0 1 1	$R1 \parallel R2 \parallel R5$	$R1 \parallel R3 \parallel R5$	$R/3$	333.3
ON	ON	ON	ON		$R1 \parallel R2 \parallel R3 \parallel R5$		$R/4$	250.0

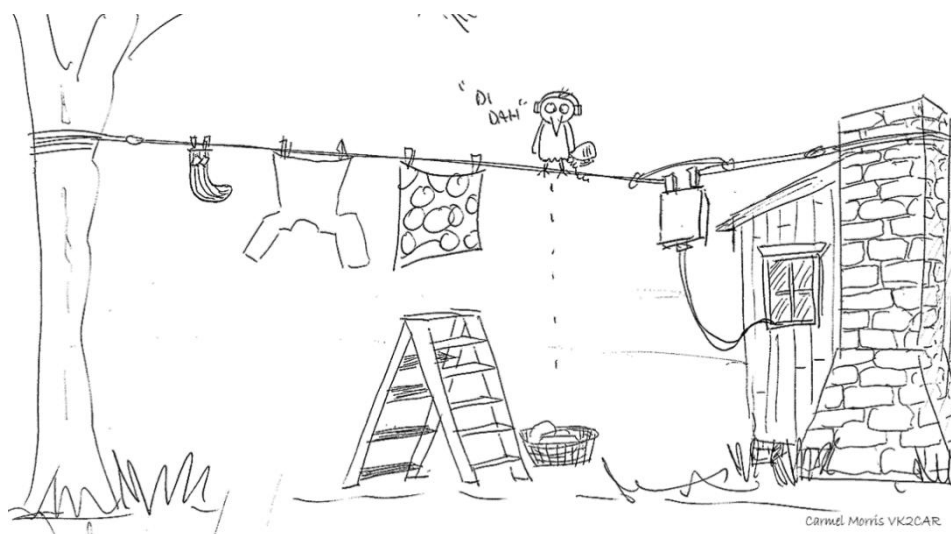
The right-most column on this chart shows the values you'd realize when $R = 1000 \Omega$.

As the author notes, you can cascade load banks to get even more values. You could also build more than one load bank with different resistance values. If you used 100Ω resistors, the lowest resistance value would be 25Ω , and with 10Ω resistors, the lowest value would be 2.5Ω .

This looks like it could be a very useful project to build, and the opportunities to be creative with the packaging are endless.

The Clothesline OCF Antenna

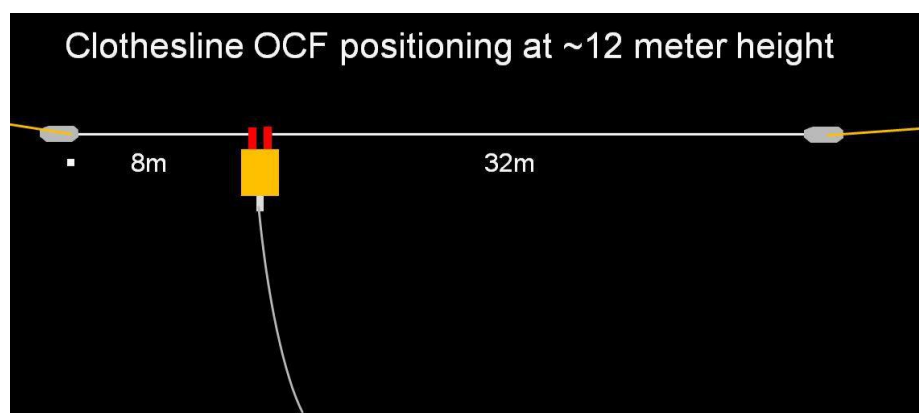
Carmel Morris VK2CAR



This is a modified home-brew antenna I came up with some ten years ago, and yes, I'm still using the same one. The asymmetric antenna design theory is based on the classic Windom design but that'd be the only similarity. OCF dipole lengths are typically in thirds; two-thirds one end, one third the other. However, I needed to experiment with different lengths due to the physical locations of trees around the house.

I changed the radiating lengths to 32 meters one end and eight meters the other, feeding into a home-brew 4:1 balun using a cheap Junkcar, ahem, Jaycrap, no, Jaycar L15 core. I know, I'm a real cheapie, but on 100W the balun works well. These lengths in fifths were superior to other lengths I tried, in that you can work more bands given the right mounting conditions.

Many say a 6:1 balun is better due to high impedance at certain heights (impedances also go up the more the antenna is off center). I could have built a double-toroid core to handle the high impedances, but I'm also lazy.



OCF Clothesline Antenna proportions



Homebrew 4:1 balun using the Jaycar L15 core with 2 x 10-turn windings

The original Windom antenna was created in the 1920s by General Loren Windom. He used a single line wire feeder straight from the radio which was also part of the radiating element @500 Ohm common mode coupling. This is different from the OCF which is not grounded and uses coax or parallel ladder line.

So, what's unique about my antenna? Mostly it's the durability/longevity; it's made of steel. Now, apart from some farm boy hams and their barbed wire fences, I know some of you may panic and say steel is not as good as a copper conductor, but this antenna is copper coated and covered in nice stealthy UV-resistant green PVC. The advantage of steel is it won't stretch and given the skin effect in wire, most of the RF ants are working hard around the outer core anyway.

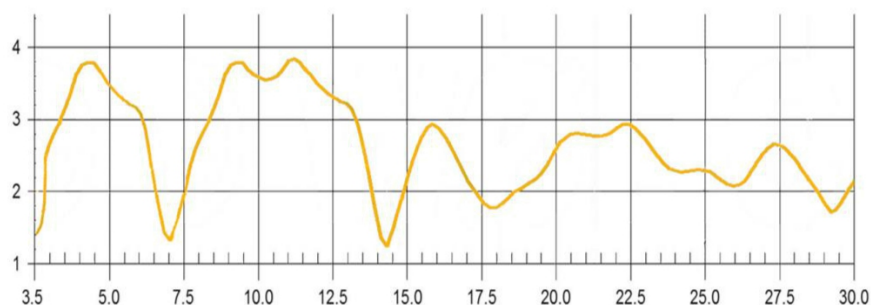
I used ten meters of RG58 feed-line, though we know 213 is better, but I'm such a feed-line stinger. Speaking of cheap, the clothes line antenna wire is darn cheap; around \$22 for a 60 meter roll at your favourite Bastards Warehouse; sorry, Bunnings. I keep my spare field OCF wound on a builder's line reel; very easy to deploy. Some folks use a feed-line choke, but I haven't found the need for it.



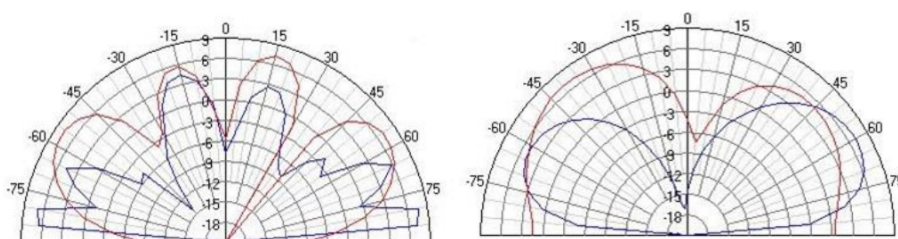
Reely good

Characteristics

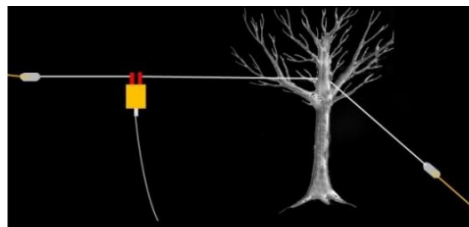
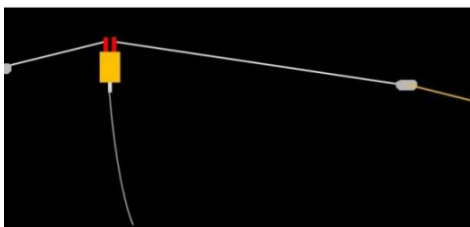
Here's the Sark reflection plot. Not so great on 28MHz, but acceptable. Of course, you may not get this at your QTH if there are coupling problems with metal roofs, or big hills or massive MacMansions nearby (like we have). If you want to experiment and try your own antenna design, try 4NEC2 first, which is a freeware Windows app that can help you model a functional antenna without wasting money. I found this useful when determining the lengths.



The radiation pattern will vary depending on your setup, but would most likely be similar to these...



The OCF design is versatile and great for portable use, though there's some added weight. The flip side is strength. If setup conditions are not ideal you could turn your OCF into an inverted V or even bend the radiating section around a tree for some really kinky stuff. Naturally the radiation patterns will vary. I should experiment with an OCF loop one day :)



Get some interesting take offs by kinking your antenna around a tree if there are space restrictions

OCF antennas can be somewhat ground-dependant for a non-ground antenna. At the longer end I have the support rope over a pulley. I can easily lower the antenna for stronger local contacts and raise for DX, though most of the time the best balance is around 10-12 meters. There's no noticeable difference in adding a copper rod for earth grounding if you wanted to try it (tip; copper rods are cheap at Hornsby Scrap); maybe in an RF noisy location for example though generally OCF antennas don't suffer QRM much.

Presently my current antenna position is not ideal due to some downed trees in a recent storm, with only 4 meters up at the shorter end and part of the longer line over my roof. Still, the antenna works well across 80/40/20, with a recent contact getting into Southern France on 7.130MHz (though his was probably bigger than mine).

This is sure one cheap antenna that'll save you money over commercial antennas. Happy Building!

Ham radio club talk collection on YouTube

The collection of **Denby Dale Amateur Radio Society** online talks are available for everyone to watch on YouTube

The talks include:

- Amateur radio on satellites and the International Space station
- Introduction to amateur television
- HF propagation
- Practical Wireless editor Don Field G3XTT
- Low Power transmitters
- Bob Heil K9EID - his radio journey
- A mini expedition with radio to the Isles of Scilly
- Having fun and learning morse code
- Operating pedestrian mobile in Spain
- Podcasters Eric and Martin
- Radio and climbing mountains and hills
- Using vector network analysers
- High altitude balloons
- Building magnetic loop antennas
- Working DX without spending loads

Watch the collection of Denby Dale ARS online talks at

<https://www.youtube.com/channel/UCq9nFTkJJAjOdPZVytoPOcg/videos>

The next Zoom online talk is at 7:30 PM on Wednesday, September 30. The speaker will be Anthony Luscre K8ZT on Operating on FT4 and FT8 data modes.

The Zoom ID for all DDARS meetings is 842 5221 3056

For further information see <http://www.ddars.net/>

How to win a VHF radio contest, DR9A 2017

I came across this video on You Tube, recently, and was quite impressed at their VHF arial array. I think it's worth a look just for interest.

Here is the link: https://www.youtube.com/watch?v=2Rh3-K8V4_o

Edwin Powell Hubble (1889-1953)



Edwin Hubble, for whom the Hubble Space Telescope is named, was one of the leading astronomers of the twentieth century. His discovery in the 1920s that countless galaxies exist beyond our own Milky Way galaxy revolutionized our understanding of the universe and our place within it.

Hubble, a tall and athletic man who excelled at sports and even coached high school basketball for a short while, started his professional science career during one of the most exciting eras of astronomy. It was 1919, just a few years after Albert Einstein published his theory of general relativity, and bold, new ideas about the universe were fermenting. Hubble was offered a staff position at the Mount Wilson Observatory, which housed the newly commissioned 100-inch Hooker telescope, then the largest telescope in the world. Hubble, it seemed, had the universe placed in his lap.

Most astronomers of Hubble's day thought that all of the universe — the planets, the stars seen with the naked eye and with powerful telescopes, and fuzzy objects called nebulae — was contained within the Milky Way galaxy. Our galaxy, it was thought, was synonymous with the universe.

In 1923 Hubble trained the Hooker telescope on a hazy patch of sky called the Andromeda Nebula. He found that it contained stars just like the ones in our galaxy, only dimmer. One star he saw was

a Cepheid variable, a type of star with a known, varying brightness that can be used to measure distances. From this Hubble deduced that the Andromeda Nebula was not a nearby star cluster but rather an entire other galaxy, now called the Andromeda galaxy.

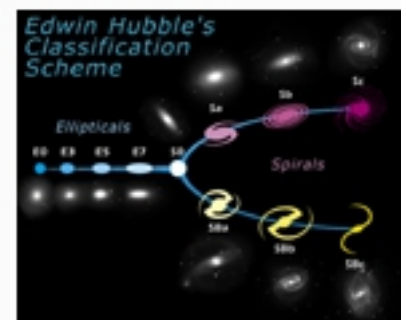


In the following years he made similar discoveries with other nebulae. By the end of the 1920s, most astronomers were convinced that our Milky Way galaxy was but one of millions in the universe. This was a shift

in thought as profound as understanding the world was round and that it revolved around the sun.

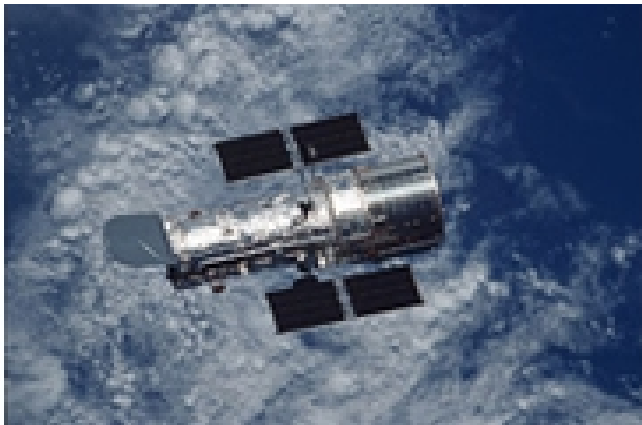
Hubble then went one step further. By the end of that decade he had discovered enough galaxies to compare to each other. He created a system for classifying galaxies into ellipticals, spirals and barred spirals — a system called the Hubble tuning fork diagram, used today in an evolved form.

But the most astonishing discovery Hubble made resulted from his study of the spectra of 46 galaxies, and in particular of the



Doppler velocities of those galaxies relative to our own Milky Way galaxy. What Hubble found was that the farther apart galaxies are from each other, the faster they move away from each other. Based on this observation, Hubble concluded that the universe expands uniformly. Several scientists had also posed this theory based on Einstein's General Relativity, but Hubble's data, published in 1929, helped convince the scientific community.

Hubble and his colleague at Mt. Wilson, Milton Humason (who started as a mule driver during the construction of the observatory, then janitor, then night assistant), estimated the expansion rate of the universe to be 500 kilometres per second per megaparsec. (A megaparsec, or a million parsecs, is a distance equal to about 3.26 million light-years; so a galaxy two megaparsecs away is receding from us twice as fast as a galaxy only one megaparsec away.) This estimate is called the Hubble Constant, and scientists have been fine-tuning it ever since.



The Hubble Space Telescope was launched in 1990, one of its major goals being to pin down the Hubble Constant. In 2001, a team studying supernovae with Hubble, along with ground-based optical telescopes, established a rate of 72 ± 8 km/sec/Mpc. In 2006, a team studying the cosmic microwave background with NASA's WMAP satellite tweaked this measurement to 70 km/sec/Mpc. Hubble, the telescope, also helped discover that not only is the universe expanding, the expansion is

accelerating. The mysterious force causing this acceleration is dubbed dark energy.

Hubble was born on November 20, 1889, in Marshfield, Missouri, and moved to Wheaton, Illinois, before his first birthday. He studied mathematics and astronomy at the University of Chicago and earned a bachelor of science degree in 1910. He was one of the first Rhodes Scholars at Oxford University, where he studied law. After serving briefly in World War I, he returned to the University of Chicago and earned his doctorate degree in 1917. After a long career entirely at Mt. Wilson Observatory, he died of a heart attack on September 28, 1953, in San Marino, California. As with the telescope that bears his name, Edwin Hubble transformed our understanding of the universe. His spirit of discovery lives on today in the Hubble Space Telescope.

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