Earth finds its

By Michael Hanlon & William Hartson

YOU will have to travel light years to get there, but it feels just like home. For the first time, a solar system that closely resembles our own has been discovered by scientists.

The Earth's "twin", which so far remains nameless, has been found orbiting a star that astronomers call 55 Cancri. In all, experts have discovered 13 planets orbiting other stars, but until now none of these solar systems has been anything like ours.

In September, for instance, British university student Kevin Apps found a huge blue planet — inevitably dubbed Planet Kevin — in a totally alien system.

Now, however, scientists at the University of Arizona report that they have come across a "circumstellar disc" of material orbiting 55 Cancri, a three-billion-year-old star.

The disc is important as it closely resembles our own Kuiper belt, a ring of comets and dusty debris left over from the early days of our solar system's formation, according to the scientists.

Until the discovery, nothing like our own "cosmic village" — a medium-sized star orbited by a suite of planets of varying sizes and edged by a cloud of comets — had been located.

One of the scientists behind the discovery, David Trilling, said the dust disc around 55 Cancri "mirrored" that around our Sun. "And, for all w know, there could be other similarities in this system yet to be discovered," he added.

Trilling and his colleague Robert Brown made their breakthrough using NASA's infrared telescope on Mauna Kea in Hawaii.

They also had a cold coronagraph. The instrument, nicknamed CoCo, blocks light from the central star so that observers can photograph the region around it.

The planet orbiting 55 Cancri some 40 light years away is known to be almost twice the size of Jupiter, our solar system's biggest world. There may well be other planets, including Earth-sized ones, but until bigger and better telescopes are built it is impossible to see them at this distance.

But the Kuiper belt-like disc around 55 Cancri, reported in a recent issue of *Nature* magazine, and its known planet strengthens the idea that our galaxy holds many other solar systems like our own.

"To know that there is this analogue for our solar system, of course, implies that there are others, that this isn't the only one," said Trilling.

"The more analogues we find, the more data we can interpret for better theories and then the more we can observe and figure out how planets and solar systems form." Can we learn what governs planet formation, including the question of how did Earth form? "That's the question," said Trilling. Spurred on by the breakthrough discovery, he will be hoping to provide an answer.

As for the discovery made by Kevin Apps is concerned, it remain a miraculous achievement for someone so young. but Kevin speaks of it in realistic terms. "If I hadn't lost my job I would never have gone to university," he says.

At the moment it is a world with no name. But one day the strange blue sphere in a star system far, far away may come to be called Planet Kevin in honour of its young discoverer.

Kevin, a mere undergraduate, has stunned professional astronomers by finding the new planet outside the solar system. The planet, which orbits a sun-like star 154 light years away, is one of only 12 ever discovered outside our own star system.

Kevin, 25, who is halfway through an astrophysics degree at Sussex University, has been obsessed with astronomy since he was seven, and was given his first telescope when he was 10. He said the discovery was "like a fairy story".

He went on: "I am just an undergraduate who has done a couple of weeks' work, dug out a few stars and gets credited with having helped discover this planet."

Kevin could not afford to go to university when he finished his A-levels, and took a job in the Duracell battery works in his home town of Crawley, Sussex. Then, two years ago, he was made redundant. "If I hadn't lost my job I would never have gone to university," he said.

He blew his redundancy money on a trip to Hawaii, where he saw the giant Keck telescope, which is being used to search for distant planets, and
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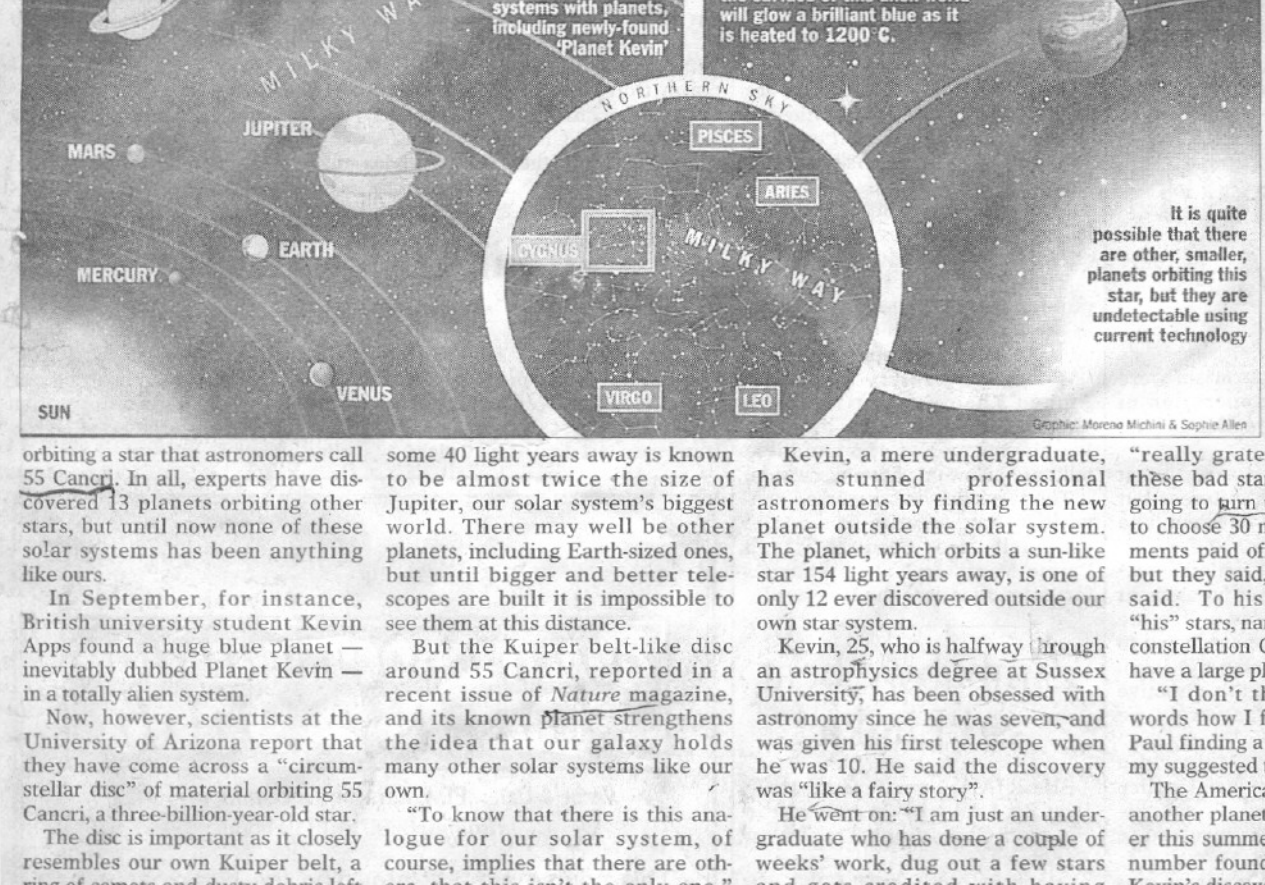

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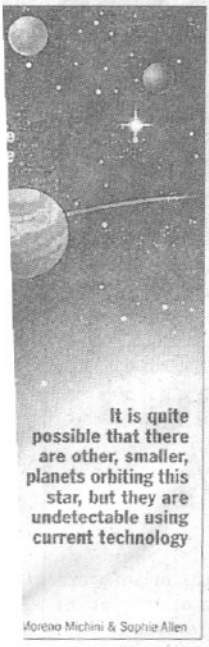
emain planets, and decided to return to his studies in the hope of becoming a professional astronomer.

Meanwhile, world-famous "planet hunters" Geoff Marcy and Paul Butler, who had discovered nine of the 10 "extra solar" planets found so far, had drawn up a list of stars they were going to probe with the Keck telescope.

Kevin e-mailed Marcy and Butler for their list — 300 in all — and using data gleaned from the Internet decided that 30 of them were unsuitable.



It is quite possible that there are other, smaller, planets orbiting this star, but they are undetectable using current technology

Moreno Michini & Sophie Allen

He reasoned that solar systems like ours may be the most likely to harbour life, so he based his search around nearby sun-like stars. He chose 30 which were "dead ringers" for our sun, and plucked up the courage to tell the astronomers they should substitute his stars for those in their list.

This approach was "pretty intimidating", but his courage paid off. Both Marcy and Butler were "really grateful that I'd dug out these bad stars which were never going to turn up planets". Offering to choose 30 more stars as replacements paid off too. "It was a joke, but they said, yeah, go for it," he said. To his amazement one of "his" stars, named HD187123 in the constellation Cygnus, turned out to have a large planet orbiting it.

"I don't think I can put into words how I feel about Geoff and Paul finding a planet around one of my suggested targets," Kevin said.

The American astronomers found another planet in their search earlier this summer, bringing the total number found so far — including Kevin's discovery — to 12.

As for the issue of naming the planets, the trend so far has been to rely on Greek mythology. Jupiter, largest of the planets, was named after the most important of the gods. Saturn, the great titan, was Jupiter's father, and Neptune, god of the sea, was his brother.

Venus, the brightest and most beautiful object in the night sky, was named after the goddess of love; Mars, with its blood-like red glow, took the name of the god of war. And the planet that seemed to move fastest across the sky was named Mercury after the fleet-footed messenger of the gods.

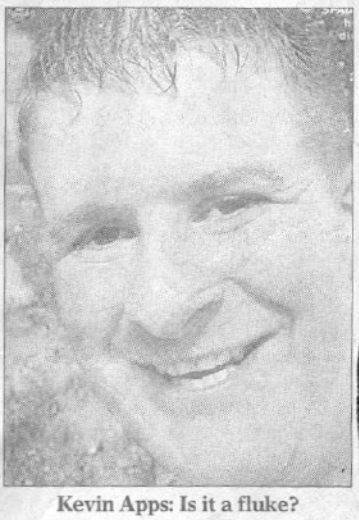
When William Herschel discovered a new planet in 1781, he tried to call it Georgius Sidus — the George star — after King George III. But a king is not a god and the planet became known as Uranus, who was Saturn's father.

Finally came Pluto, the last planet of the solar system to be discovered and named, appropriately, after the Greek god of the dead who had the power to make himself invisible.

Beyond the major planets, the naming of lesser celestial bodies is more flexible, although the International Astronomical Union still has firm guidelines.

Essentially, the right to name a new minor planet or asteroid is a privilege given to its discoverer. However, any suggestion must be approved by the Small Bodies Names Committee of the IAU. It advises that proposed names should be no more than 16 characters long, preferably one word, non-offensive, and not too similar to the name of any other heavenly body. The names of pet animals are discouraged.

Otherwise, you can choose more or less what you want. Last year, for example, the asteroid formerly known as minor planet 6939 was given the official name of Lestone. Its discoverer, G.V. Williams had wanted to call it after his home



Kevin Apps: Is it a fluke?

town of Leighton Buzzard, Bedfordshire, so he chose the single-word name by which it was listed in the Domesday Book. Leighton Buzzard thus became the first Bedfordshire town to make the voyage into outer space. — Dawn\Express News Service ■