What does the ‘uniquely rational way’ for us to communicate with other intelligent beings in space depend on?

We must conclude from the work of those who have studied the origin of life that, given a planet only approximately like our own, life is almost certain to start.

Of all the planets in our own solar system, we are now pretty certain the Earth is the only one on which life can survive.

Mars is too dry and poor in oxygen, Venus far too hot, and so is Mercury, and the outer planets have temperatures near absolute zero and hydrogen-dominated atmospheres.

But other suns, stars as the astronomers call them, are bound to have planets like our own, and as the number of stars in the universe is so vast, this possibility becomes virtual certainty.

There are one hundred thousand million stars in our own Milky Way alone, and then there are three thousand million other Milky Way, or galaxies, in the universe.

So the number of stars that we know exist is now estimated at about 300 million million million.

Although perhaps only 1 per cent of the life that has started somewhere will develop into highly complex and intelligent patterns, so vast is the number of planets, that intelligent life is bound to be a natural part of the universe.

If then we are so certain that other intelligent life exists in the universe, why have we had no visitors from outer space yet?

First of all, they may have come to this planet of ours thousands or millions of years ago, and found our then prevailing primitive state completely uninteresting to their own advanced knowledge.

Professor Ronald Bracewell, a leading American radio astronomer, argued in Nature that such a superior civilization, on a visit to our own solar system, may have left an automatic messenger behind to await the possible awakening of an advanced civilization.

Such a messenger, receiving our radio and television signals, might well re-transmit them back to its home planet, although what impression any other civilization would thus get from us is best left unsaid.

But here we come up against the most difficult of all obstacles to contact with people on other planets — the astronomical distances which separate us.

As a reasonable guess, they might, on average, be 100 light-years away.

(A light year is the distance that light travels at 186,000 miles per second in one year, namely 6 million million miles.)

Radio waves also travel at the speed of light, and assuming such an automatic messenger picked up our first broadcasts of the 1920s, the message to its home planet is barely halfway there.

Similarly, our own primitive chemical rockets, though good enough to orbit men, have no chance of transporting us to the nearest other star, four light years away, let alone distances of tens or hundreds of light years.

Fortunately, there is a ‘uniquely rational way’ for us to communicate with other intelligent beings, as Walter Sullivan has put it in his excellent book, We Are Not Alone.

This depends on the precise radio frequency of the 21-cm wavelength or 1420 megacycles per second.

It is the natural frequency of emission of the hydrogen atoms in space and was discovered by us in 1951; it must be known to any kind of radio astronomer in the universe.

Once the existence of this wavelength had been discovered, it was not long before its use as the uniquely recognizable broadcasting frequency for interstellar communication was suggested.

Without something of this kind, searching for intelligence on other planets would be like trying to meet a friend in London without a pre-arranged rendezvous and absurdly wandering the streets in the hope of a chance encounter.

The word ‘galaxy’ describes a Milky Way or a collection of stars (of which there are about three thousand million in the universe).

According to the author, it is highly probable that life exists in other parts of the universe because there are so many stars with planets that intelligent life is bound to be a natural part of the universe.

Even if one were traveling at 186,000 miles per second, it would be extremely difficult to visit another planet because most of them would take an average of a hundred years to reach.

It might be possible to accomplish interstellar communication using the radio frequency of the 21-centimetre wavelength, or 1,420 megacycles per second, which is the natural frequency of emission of hydrogen atoms in space.

This lamp is broken, and we want to buy another one approximately the same if we can find one.

It was too early for life to develop four billion years ago, given the prevailing primitive state of the earth.

I have an automatic messenger on my PC.

I can program it to display a message on the screen at a certain time in the future.

Man has already overcome some of the obstacles to space flight, but there are many more.

There are now lots of pieces of machinery (old satellites and so on) orbiting the Earth.

At the moment, interstellar space travel is only possible in science fiction.

His present job was all the result of a chance encounter with the company’s Human Resources Manager at a party.

The first obstacle to communication with other planets is the vast distance between star systems.

On average, stars can be 100 light years away, which means that, if anyone left an automatic messenger here in the past, a broadcast from the 1920s would only be halfway home.

Although chemical rockets have no chance of reaching other stars, there is nevertheless one way to communicate with other intelligent beings and that is to use the natural frequency of the emission of hydrogen atoms in space.

Although only discovered in 1951, this now seems to be our best chance of interstellar communication.

Flying saucers, or UFOs, as they are usually called now (Unidentified Flying Objects), are the names given to unexplained phenomena that have been seen in our skies for as long as history has been recorded.

Ancient texts from many parts of the world have mentioned ‘flying chariots’ with fire coming from them, and many have come down to earth carrying ‘gods’.

Many of these phenomena in the past were clearly reports of planets (Venus, for example), meteors, meteorites, ball lightning and other natural, physical events which are still mistaken for UFOs.

Some, however, might well have been simplified reports of visits by extraterrestrials.

Professor Ronald Bracewell has suggested that our Earth may have been visited in the distant past by a superior civilisation.

If he were correct and visitors from such a civilization left an ‘automatic messenger’, might they also not have visited different parts of the world and shown themselves to certain people?

In recent years, and certainly since the 1940s, there seem to have been more reports of UFOs than ever before.

Various explanations have been given for this.

One suggestion is that there are extraterrestrials who have become more interested in our planet since we began to ‘play’ with the atmosphere of the world on a global scale, to detonate nuclear bombs, and since we have begun to escape from our own gravity into orbit and to the moon.

Another explanation is that most reports of UFOs are false reports from people who simply want their ‘moment of fame and glory’ in the media, and the media do seem to rule the lives of many people in the world.

Other sightings can, and have been, explained as weather balloons, the planet Venus, ordinary aircraft seen at unusual angles in unusual light, special weather clouds, reflections of light on low cloud, and so on.

But even official government investigators in many countries have had to admit that certain cases of UFO sightings defy rational scientific explanations, and these are the ones that are worrying.

Whatever UFOs may be, very few governments will admit that they know anything about them—or even that they are interested in them.

And yet strangely, despite regular reports of sightings and contact with UFOs in the press, radio, and on television, governments maintain an almost ominous silence.

During the Cold War, it was suggested that UFOs were possibly a new kind of craft developed by the other side.

But little has been said.

It is known that both the Russians and the Americans have built and flown circular aircraft that might be described as ‘flying saucers’, but again, little has been said about their development or how successful they may have been.

There are almost dozens of theories about UFOs.

They could be advanced aircraft developed by nations on Earth, especially the U.S.A. or Russia.

They could be extraterrestrial—from somewhere else in our solar system or from another star system.

Could they perhaps be from another dimension, as has been suggested?

Could most instances of UFOs be the result of mass hysteria or psychological disturbances?

Whatever they may be, one thing is certain: there are just too many completely unexplained occurrences for them to be ignored for very much longer.

Does art imitate life?

Or does life imitate art?

Are films like E.T., Close Encounters of the Third Kind, Men in Black, and Independence Day previews of what might really happen on Earth sometime soon?

Or are they just like the science fiction novels of Jules Verne and H. G. Wells, visions of a purely fictional future?

It’s an excellent film—you’re sure to enjoy it.

I was just about to leave the house when the telephone rang.

The concert was due to begin at 7.30, but it was delayed for half an hour.

Live images of the robotic vehicle, Sojourner, have been relayed from the planet Mars to our T.V. screens in seconds.

There must be other stars, like our own sun, with orbiting planets similar to Earth.

The cost of repair has been estimated at $45.

German mechanical engineering is highly esteemed worldwide.

It’s quite natural for a boy’s voice to break when he is about 14.

Boxers take a lot of physical punishment.

Some things are better left unsaid.

The floods have caused untold misery to hundreds of thousands of farmers this year.

The whole village has been searching for the missing boy.

The security guards are searching each passenger.

He’s incapable of adding up a simple list of figures, let alone doing his annual accounts for the Inland Revenue.

He doesn’t earn enough to support himself, let alone a wife and children.

The possibility that life exists on other planets is almost certain because of the sheer number of planets in the universe.

According to the writer, our planet may have been visited at some time during the distant past.

Travel in the universe is difficult because even at the speed of light, distances are immense.

The discovery of the natural frequency of emission of hydrogen atoms in space is important because it would be universally recognized by intelligent life anywhere in the universe.

Life must be present on a planet approximately like our own.

Why have we had no visitors from outer space so far?

They were not interested in our primitive state.

We have no chance of being transported by our own primitive chemical rockets.

They are almost certain to have planets like our own.

What impression they would get of us is best left unspoken.

We come up against the most difficult of all obstacles to reaching out to people.

This depends on the exact radio frequency of the 21cm wavelength.