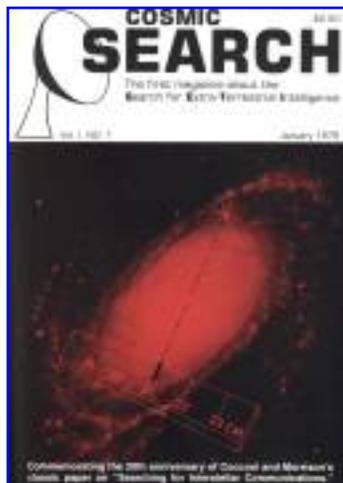




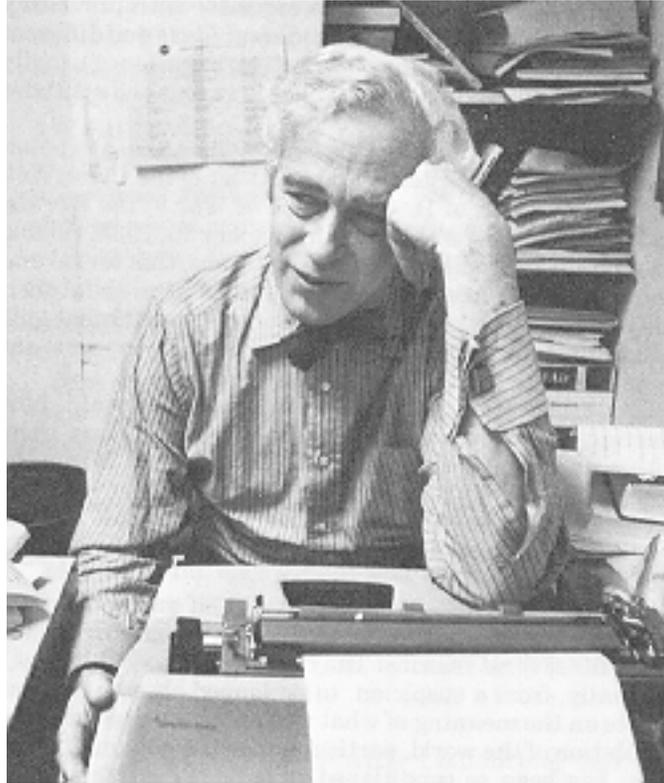
## **North American AstroPhysical Observatory (NAAPO)**



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[Article in magazine started on page 37]

# What If We Succeeded?

By: Walter Sullivan



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*A fascinating analysis of the search for extraterrestrial intelligence and its relation to our hopes, fears and religious beliefs.—Eds.*

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The basis for the existence of this magazine and, I assume, the mutual conviction of all those on its editorial board is that seeking out and exchanging information with extraterrestrial intelligence is a supremely worthwhile goal. Yet this view is not shared by everyone. George Wald, professor of biology at Harvard, winner of a Nobel Prize, and himself a firm believer that life has probably evolved in many regions beyond the earth, has said: "I can conceive of no nightmare so terrifying as establishing such communication with a so-called superior (or if you wish, advanced) technology in outer space."

Most of us believe that we would stand to benefit enormously from communication

with another civilization. Since our rate of technological advance is so rapid (and, presumably, the same applies to other civilizations), the technology with which we make contact is almost certain to be far more advanced than ourselves. If they lagged behind us, they could not communicate, and it is highly unlikely that they would happen to be just at the transitory stage in which we find ourselves.

Ever since Cocconi and Morrison proposed a rational way to seek out signals from another world, Morrison himself and many others have cited what an enriching experience it would be for humanity to learn of the histories, political and economic organizations and cultural achievements of entirely different civilizations. Such knowledge could enable us to leap into the future, avoiding the pitfalls that have hampered our progress in the past. Our excessive dependence on the private automobile, which has made us dangerously vulnerable to fuel shortages, might have been averted had we had a clearer vision of the future.



Photo by Su Ark

**"Our excessive dependence on the private automobile might have been averted had we had a clearer vision of the future."**

Such arguments can be carried too far, of course. Some enthusiasts say we could learn how to cure cancer or how to tame the fusion reaction of the hydrogen bomb. But it is by no means certain that beings who evolved via a different biochemical route would even know what cancer is. And by the time we asked them how best to achieve fusion we should — I hope — have long since learned to do it for ourselves. To exchange messages over distances measured in many light years could very well require centuries.

Wald's concern is for mankind's self-esteem. To learn that someone else was far more capable than we, and thus to become dependent on their achievements, rather than our own, strikes him with horror. "The thought that we might attach, as by an umbilical cord, to some more advanced civilization . . . does not thrill me, but just the opposite." It would, he told a 1972 symposium at Boston University, represent

"a degree of degradation of the human enterprise."

A more direct fear has been expressed by Sir Martin Ryle, another Nobel laureate — in his case, for development of the aperture synthesis method of combining signals from many radio antennas to create relatively detailed radio images of the sky. His alarm was activated by the news (somewhat distorted) that, to mark the inauguration of the newly-surfaced dish of the giant antenna at Arecibo, Puerto Rico, a message had been transmitted on November 12, 1974, toward Messier 13, a globular cluster of 300,000 stars in which, conceivably, a civilization may reside.

The message was in the form of a television picture coded in binary form along the lines proposed by Bernard Oliver and Frank Drake as a likely mode of interstellar attention-getting. What Sir Martin may not have realized was that the target stars were so distant that the "message" would not reach them for 24,000 years and by then would be so weak that interception was unlikely. It was not a really serious attempt at interstellar communication. Nevertheless Sir Martin urged that no attempt at direct contact be made without international agreement — possibly through the International Astronomical Union. In urging I.A.U. action he said there was no assurance "they" would be friendly. They might look upon the earth as a new field for colonization and exploitation.

This view is not shared by many other astronomers. They consider interstellar travel so difficult that it may forever prove totally impractical. Ronald Bracewell, the Stanford University radio astronomer, dismisses as absurd the idea that any civilization that distant would seek to enslave us, bring us home as cattle or exploit our planet's already severely diminished resources. Indeed it can be argued that, in view of the capabilities almost within our own reach, such civilizations could synthesize their own proteins and other raw materials and, if need be, create their own "slaves." To seek out such resources on a planet many light years away would be sheer folly.

Sebastian von Hoerner of the National Radio Astronomy Observatory in West Virginia sees in communication with other civilizations a way to avoid the intellectual stagnation toward which, he fears, we are headed. It would provide a long-term form of competition, free from the threatening aspects of competing with those close by. "Expansion then would be mental, not physical," he has written.

After the creation of the National Aeronautics and Space Administration in 1958 a study by the Brookings Institution was commissioned to survey benefits and problems likely to arise from the space program. One possibility considered in the resulting report was that, through exploration of the moon and planets or through radio monitoring, evidence would be found of an extraterrestrial civilization.

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***"The discovery will say to us: 'Perhaps we, too, can make it! Perhaps high technology is not the inevitable ticket to self-destruction. There is hope for us yet!'"***

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"Anthropological files," said the report, "contain many examples of societies, sure of their place, which have disintegrated when they have had to associate with previously unfamiliar societies espousing different ideas and different life ways; others that survived such an experience usually did so by paying the price of changes in values and attitudes and behavior."

The fate of the American Indian would be a case in point. Another sometimes cited example is that of the Orson Welles dramatization of H. G. Wells' *The War of the Worlds*, broadcast by CBS on the night of October 30, 1938. He told his nationwide audience, in ominous tones, that for several years, as people on earth had unwittingly gone about their daily tasks, there were "across an immense ethereal gulf, minds that regarded this earth with envious eyes and slowly and surely drew their plans against us . . ."

The simulated newscast that followed told how Martians — hideous creatures that slew all before them with a death ray — had landed in New Jersey. While the dramatization was make-believe, the panic that resulted, particularly in New Jersey, was very real. People rushed, partially clad, from their homes and some took flight in their automobiles.

Was this a taste of what to expect, if emissions from another civilization are detected? That seems highly unlikely for several reasons. The news would probably break gradually, from a suspicion, to prolonged observation and debate on the meaning of what was detected. Secondly, the population of the world, particularly

in the advanced countries, has been so conditioned to believe extraterrestrial creatures may exist that confirmation would be far less of a shock than a few decades ago.

Such conditioning has come, in part, through books, magazine articles and television shows that are reasonably scientific. It has also been affected by a flood of pseudoscientific literature and television offerings, ranging from arguments in favor of landings by ancient astronauts to nurture of the widespread belief that "unidentified flying objects" (many of which are neither objects nor "flying") are manned by aliens from another world.

An example of how the news might break gradually is the discovery of pulsars, first designated LGM's (for "Little Green Men") because of the fleeting suspicion that their highly rhythmic radio pulses might be related to distant civilizations. It was also suspected (at first) that they were man-made and reflected from the sky. And it was felt that all natural explanations had to be eliminated before the Little Green Men idea could be taken very seriously. A natural source — spinning neutron stars — was finally recognized.

The development whose impact was probably closest to that to be expected from discovery that we are not alone in the universe was the Copernican Revolution that displaced mankind and this planet from the center of things. It was spread over decades of debate and observation.

Another factor mitigating against panic is what some astronomers refer to as the "quarantine" provided by interstellar distances. They are so great that, in the few years since powerful transmissions began on earth, such radio and radar waves could not have reached any but the nearest stars. Hence, if artificial emissions are detected they will probably not be aimed at this planet but intended for some other purpose, such as beacons to draw attention to themselves, tracking spacecraft, or internal communications. Furthermore, if we detect signals they will have spent years reaching us and we can take our time studying them before deciding what to do.

Their detection has been likened to discovery of the New World by Columbus, but that new world was only a few weeks' sailing distance away. Here we are talking about news that would have taken years to reach us, traveling at the speed of light.

The news, of course, would still be a shock. One can anticipate and brace oneself against the death of a loved one, but when it happens there is still a terrible confrontation with reality.

Harrison Brown, former Foreign Secretary of the National Academy of Sciences, has written a novel about the first contact, entitled *The Cassiopeia Affair*. In this case the observation is reported to the President of the United States who, in announcing it, seeks to use the news to bring mankind closer together and achieve universal disarmament. His political opponents deride the report as a fraud, the astronomer who made it, based on a single observation, dies of a heart attack, and it is discredited until, at the close of the story, it is confirmed by observations in China.

Since the start of the modern search for intelligent signals in 1959 theologians have wrestled with the implications, for their various religions, of the potential discovery that beings exist more advanced technologically — and, perhaps, spiritually — than ourselves. But it must be remembered that consideration of such possibilities dates back a long time.

Thus Lucretius, discussing the theories of Democritus and his fellow Atomists in the Fourth Century B.C., saw them as an argument that, the laws of nature being universal, what has happened on Earth must also have occurred elsewhere. "You are bound therefore to acknowledge," he wrote, "that in other regions there are other earths and various tribes of men and breeds of beasts."

When Copernicus displaced the earth from the center, of the solar system, (the monk) Giordano Bruno did not see this as a cause for ecclesiastical despair. It only meant, in his view, that there were other worlds with other worshipful beings, each imperfect and unsuited to manifest the perfection of God's image, but being infinite in number, collectively capable of doing so.

That he was burned at the stake as a heretic is often cited as evidence that religions lag far behind science in their world view, but this has been challenged by Krister Stendahl, Dean of the Harvard School of Theology. At the Boston University symposium he said: "I have studied very carefully the way in which the Christian church has lived with changed world views, from a near-Eastern view to the Ptolomaic view to the Copernican view, etc." The resistance to change, he asserted,

came not from the theologians but from society as a whole." And you would never hear a Jesus or a Buddha or a Mohammed criticizing the scientific-world view of their time" he said. "They take for granted the world view of their time, usually on a very popular level . . ."

He concluded, therefore, that the great religions could cope with the discovery of intelligent extraterrestrial life, as they have with other scientific discoveries. It should also be remembered that some religious faiths, such as the Buddhist, Mormon and to some extent Jewish faiths, envision many inhabited worlds. Christian theologians, such as William Ralph Inge, the "gloomy Dean" of St. Paul's Cathedral in London, have pondered the implications. "There may be, and no doubt are, an immense number of souls in the universe." Inge wrote, "and some of them may be nearer to the divine mind than we are."

Certainly, as with earlier scientific discoveries bearing on such questions as the origin of life and of the earth, established religions will come under pressure to modify their dogma. Since the Bible says God created man in His own image, it has been pointed out, the definition of "image" may have to be revised, for it is improbable that creatures evolved on other worlds will resemble us in all respects.

I believe, however, that if we detect evidence that another civilization exists, one implication will completely outshine all others. The discovery will say to us: "Perhaps we, too, can make it! Perhaps high technology is not the inevitable ticket to self-destruction. There is hope for us yet!"

Of course such a discovery may never take place. We may finally become convinced that we are alone, at least in this part of the Milky Way Galaxy. That, in itself, is an awesome thought. The late Jacques Monod, a French Nobel laureate, concluded that life on earth must have evolved from inanimate chemistry through such a train of highly improbable occurrences that it is unlikely to have happened elsewhere. Many biochemists disagree, but if that is so, what a responsibility we bear! It will then be our challenge — more than ever — to conserve that most marvelous artifact of nature, life itself, and even perhaps to spread it beyond the earth.



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**Walter S. Sullivan** was born in New York City in 1918. He has been a staff

member of the New York Times since graduating from Yale in 1940 and has been Science Editor of the Times since 1964. During World War 11 he served to Lt. Commander with the U.S. Navy. He is the author of a number of books including "Quest for a Continent" (1957) and "Continents in Motion" (1974). His book "We Are Not Alone" (1964) gives an excellent detailed history and discussion of SETI from many viewpoints and won the International Non-Fiction Book Prize for 1965. In 1963 he received the American Association for the Advancement of Science-Westinghouse science writing award for his publications. Sullivan is a member of the Editorial Board of COSMIC SEARCH.

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