

It is certainly likely that our present knowledge of (elementary) particles is incomplete. I remind you of the story of the fisherman who was fishing with a net of 6-inch mesh. He concluded that all of the fish in the sea were larger than 6 inches.
- W.K.H. Panofsky in Ridenour p. 223

To observations which we ourselves make
We grow more partial for th' observer's sake. Alexander Pope

Common sense is a docile thing. It sooner or later learns the ways of science. Henry Margenau

Santayana spoke truly when he said that nothing gives such an idea of the infinite as human credulity. Hildebrand

Some things take a certain minimum time to accomplish; you can't make a baby in one month by putting nine men on the job. Hugh Dryden

Mathematics can never tell you what is; only what would be if. Po'ncare

The main business of a university is to examine the discrepancies between natural phenomena and the currently accepted explanations of them. In Hildebrand

One nourishes the tree of science without knowing which branch will bear the apple. R. H. Ellis

Blessed is he who expects nothing, for he shall never be disappointed.

Knowledge is a sacred cow, and our problem is to figure out how to milk her while keeping clear of her horns. Szent-Gjorgyi

Ill fares the land, to galloping fears a prey,
Where gobbleydook accumulates, and words decay. J. Thurber

The camel is a horse designed by a committee.

There may be less here than meets the eye. Tallulah Bankhead

If you want to beat the dog, you can always find a stick. DuToit

Is it more probable that nature should go out of her course, or that a man should tell a lie? Thos. Paine.

A definite maybe. Sam Goldwyn

When a distinguished but elderly scientist states that something is possible, he is almost certainly right. When he states that something is impossible he is very probably wrong. Arthur Clarke

Anyone who looks for a source of power in the transformation of atoms is talking moonshine. Rutherford 1933.

There has been a great deal said about a 3000-mile high-angle rocket. In my opinion, such a thing is impossible today and will be impossible for many years. Vannevar Bush 1945 Senate Hearings.

Every time we make an atomic bomb we corrupt the morals of a host of innocent neutrons below the age of consent. S. W. Auden

An optimist is one who sees the world in a rosy light; a pessimist is one who sees it in its true light.

he had been eight years upon a project for extracting sunbeams out of cucumbers which were to be put in phials hermetically sealed, and let out to warm the air in raw inclement summers.

Swift. Voyage to Laputa

If you take the king's shilling, you must fight the king's battles.,

An assistant dean is a mouse training to become a rat -Kuiper

Experts have sometimes been defined as people who hold vehemently antagonistic views with great tenacity. Eysenck

Sit down before fact as a little child, be prepared to give up every preconceived notion, following humbly wherever and to whatever abysses nature leads, or you shall learn nothing. THHuxley
Ev

Every genuine test of a theory is an attempt to falsify it. Popper

Matters of elegance should be left to one's tailor. Boltzmann

Science may be advanced by rejecting bad hypotheses as well as by forming good ones. H. A. Newton, 1886 AAAS address re origin of molecules

Already they have created a climate of opinion in which anyone can publicly attack the extraterrestrial theory in perfect safety -- regardless of what gross ignorance or bias he displays in the process -- but he cannot defend it without risking his business, his reputation, or his professional career. Isabel Davis CRIFO 3/56

New truth is always a go-between, a smoother-over of transitions. It marries old opinion to new fact so as ever to show a minimum of jolt, a maximum of continuity...By far the most usual way of handling phenomena so novel that they would make for a serious rearrangement of our preconceptions is to ignore them altogether, or to abuse those who bear witness for them. Wm. James in Pragmatism

If someone hands you a lemon, make lemonade. Dale Carnegie

Clark Kerr defined a "multiversity" as "a group of independent scholars united by a common parking problem."

If Edison had had an advisory committee, we'd still be in the dark.

Those who refuse to go beyond fact rarely get as far as fact... Almost every great step in the history of science has been made by the anticipation of nature, that is, by the invention of hypotheses which, though ultimately verifiable, often had very little foundation to start with. T. H. Huxley.

If you want to get along, you've gotta go along. Speaker Sam Rayburn.

It's better to keep your mouth shut and appear stupid than to open it and remove all doubt.

Few things are harder to put up with than the annoyance of a good example.

The man with a new idea is a Crank -- until the idea succeeds.

Truth is stranger than fiction, because truth is constrained to the probable.

Science is wonderful: It gives you such wholesale returns of conjecture for such trifling investment of fact. Mark Twain.

The history of scientific investigation is full of periods of uncertainty of this kind (inability to understand how ether could transmit transverse waves of sort implied in polarization effects), in which the facts seem to demand an interpretation which is rationally impossible. Barton, Optics p. 349

The entire incident (Rapid City 8/5/53), in my opinion, has too much of an Alice in Wonderland flavor for comfort. Hynek Satevepost 12/17/66.

Ibid. Hynek on scientists' unwillingness even to examine the UFO data: Some scientists refused to look through Galileo's telescope at sunspots, explaining that 'since the sun was perfect, it couldn't have spots, and therefore it was no use looking for them.'

Ibid. On life in universe: You would expect to find planets around a star just as you find kittens around a cat or acorns around an oak.

Ibid. ...The Air force has probably spent less on UFOs so far than it has on wastebaskets.

Seneca on comets: Why should we be surprised...that comets, so rare a sight in the universe, are not embraced under definite laws, or that their beginnings and ends are not known, seeing that their return is at long intervals? ... The day will yet come when the progress of research through long ages will reveal to sight the mysteries of nature that are now concealed. The day will yet come when posterity will be amazed that we remained ignorant of things that will to them seem so plain." Quoted by Whipple in New Astronomy (Sci. Am.)

The construction of an aerial vehicle which could carry even a single man from place to place at pleasure requires the discovery of some new metal or some new force. Even with such a discovery we could not expect one to do more than carry its owner. -Simon Newcomb 1903.

Re 1950 opinions as to what UFOs might be: Scully p. 187 says Soviet Deputy Foreign Minister Andrei Gromyko suggested they might be due to a Russian discus thrower who didn't know his own strength.

Scully 103 recalls New York World correspondent who telegraphed from near Kitty Hawk in December, 1903, that Wilbur Wright had just flown 250 yards in a plane. The reporter got fired for wasting telegraph charges.

All this has been said before -- but since nobody listened it must be said again. Words used to open a lecture by French philosopher Andre Bide.

Corroborative detail to lend artistic verisimilitude to an otherwise bald and unconvincing narrative. Pooh Bah, Gilbert & Sullivan (Hmakk 53)

Due to a shortage of trained trumpeters, the end of the earth will be postponed for three months.

A fanatic is one who redoubles his efforts when he has forgotten his ends. George Santayana

Truth is stranger than fiction. Truth isn't constrained to be probable. Mark Twain

I didn't understand what you said, but I disagree with it. Quip by Kuper.

1. New truth is always a go-between, a smoother-over of transitions. It marries old opinion to new fact so as ever to show a minimum of jolt, a maximum of continuity...[By far the most usual way of handling phenomena so novel that they would make for a serious rearrangement of our preconceptions is to ignore them altogether, or to abuse those who bear witness to them.]

- Wm. James in "Pragmatism". Quoted by Hall, CRIFO III-12

2. Already they have created a climate of opinion in which anyone can publicly attack the extraterrestrial theory in perfect safety-- regardless of what gross ignorance or bias he displays in the process-- but he cannot defend it without risking his business, his reputation, or his professional career.

-Isabel Davis in CRIFO II-2. 3/56

3. Anthropological files contain many examples of societies, sure of their place in the universe, 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.

1961 Brookings report, "Proposed Studies on the Implications of Peaceful Space Activities for Human Affairs. p. 215

4. The reins would be torn from our hands and we would, as a tearful old medicine man once said to me, find ourselves "without dreams", that is, we would find our intellectual and spiritual aspirations so outmoded as to leave us completely paralyzed.

Carl Jung on effects of direct confrontation with superior beings from a more advanced technology. WANA p. 279.

5. Thus Philip Morrison, in one of his lectures, questioned whether any civilization with a superior technology would wish to harm one that has just entered the community of intelligence. If he were looking through a microscope, he said, and saw a group of bacteria spell out, like a college band, "Please do not put iodine on this plate. We want to talk to you," his first inclination, he said, would certainly not be to rush the bacteria into the sterilizer.

WANA 279.

6. Intelligence may be a cancer of purposeless technological exploitation, sweeping across a galaxy as irresistibly as it has swept across our own planet...

Our business as scientists is to search the universe and find out what is there. What is there may conform to our moral sense or it may not. .. It is just as unscientific to impute to remote intelligences wisdom and serenity as it is to impute to them irrational and murderous impulses.

Freeman J. Dyson, letter to Sci. Am., April 1964.

7. Consider the willingness of some to believe in flying saucers as something supernatural, to believe incredible things, to ignore basic scientific principles and embrace the totally irrational..... The non-scientific observer grabs at the most exciting explanation and produces bizarre accounts of interplanetary visitors, or something equally foolish. -- Harlow Shapley in "The View from a Distant Planet" p. 115-6.

On p. 5, Preface, Shapley, outlining book, say, "We dwell a bit on the exciting conception...

I know all the answers but I just don't understand the question. Sign
Help! The paranoids are after me! Button

A mistake is evidence that some is trying to do something.

There are two levers for moving men; interest and fear. Napoleon

Success has a hundred fathers but defeat is an orphan, JFK, Cuba crisis

Few things are harder to put up with than the annoyance of a good
example. Mark Twain

The reports of my death are greatly exaggerated. Mark Twain

It seems to me that the most interesting stage in any investigation
is the one in which ~~the~~ people are still struggling to understand
what ~~they~~ sort of thing they are dealing with. Once we understand
what kind of thing it is, the further developments follow with a
certain predictability...In the tektite problem we are still in the
stage of attempting to find out what it is all about....(though)
the outlines of the answer are beginning to loom up out of the fog.
-John A. O'Keefe in Foreward (p. v) to Tektites, ed. by o'Keefe,
U. Chicago Press, 1963.

Problems cannot be solved until they have been discovered. - Edwin
G. Boring. Quoted in Life book on eye and vision.

Show me a man who is not confused and I will show you a man who
has not asked enough questions... It takes courage to engage confusion
deeply. - John Ciardi, quoted by prinkle in FSR June 1969

- . Sullivan - WANA-177 quotes from 1962 NAS panel report: The search for ETL, they said, "is, in the opinion of many, the most exciting, challenging, and profound issue, not only of this century but of the whole naturalistic movement that has characterized the history of western thought for 300 years. What is at stake is the chance to gain a new perspective on man's place in nature, a new level of discussion on the meaning and nature of life."

(Conference held, summer, 1962, at Univ. of Iowa, by NAS Space Sciences Board) 11-2-66

. "Another argument against the spaceship idea concerns the lack of formal contact with the UFO occupants. Since visiting spaceships ought to be piloted by some sort of intelligent beings, wouldn't it be reasonable to expect that they would desire contact with other intelligent beings, namely us?...

"This argument assumes that we can understand the motives of an extraterrestrial being. Of course we cannot.... To inductively extrapolate from our own current sociological approaches to those of other intelligent entities would be to commit the logical sin of extrapolation in a most flagrant manner.

/// "Imagine the Aborigines of Central Australia, who are still in the stone age and who have not even developed the bow and arrow. They have had no contact with modern civilization. What happens when a jet plane flies overhead and one of them observes it? When he tells of the huge, shiny bird that didn't flap its wings, had no feet, made an ear-splitting roar, and even had smoke coming out of its tail, surely his fellows assume that he is crazy. Or if the phenomenon becomes so common that it must be accepted as real, they could hardly be expected to deduce from it the condition of our modern civilization, let alone our motives. 'Why', they might ask, 'don't the intelligent beings who guide this mighty bird land and trade bone nosepieces with us?'

Frank B. Salisbury, Bioscience, 17, 15, Jan. 1967

11. According to (Michel), one of four main "contact" hypotheses may hold

- 1) At the time of space exploration, contact between races of different biological origins may be impossible, or may follow one-way channels parallel to the "contact" between a naturalist and the insects he observes; insects do perceive the contact but only on their level, and they are unable to participate in a voluntary exchange of information.
- 2) Although possible, this contact may be systematically or temporarily avoided.
- 3) The contact may already have taken place secretly.
- 4) The contact may be openly realized on a "spiritual" level which is not perceptible to us; it is made on "their" mental level and remains invisible to us in our present state of consciousness. Similarly, mice may have eaten thousands of books without ever perceiving them for what they are.

-Vallee. Anatomy of a Phenomenon p. 172

12. Such is the spectacle of Prof. Bernard Lovell, who last year produced such gems as "UFOs are purely American phenomena" and "no trained observer or astronomer has ever reported such a sighting." Lovell obviously does not know the first thing about the subject, and it would be better if he'd admit it. From FSR Review, 13/2, March-April 1967, p. 26

ETL - Quotes

13. Michel TAFS-9 quotes French Prof Auge' as describing ufos as "the aerodynamical version of sea serpents."

14. Shklovski and Sagan 385: "...the discovery of life on one other planet...can, in the words of the American physicist Philip Morison, of MIT, "transform the origin of life from a miracle to a statistic."

15. Sir Bernard Lovell, director of Jodgell Bank Observatory was quoted in the April 19, 1966 London Daily Express as having said in Montreal on 4/19 that reports of flying saucers seen over North American lately and the suggestion that they carried visitors from outer space are utter nonsense. "All the unidentified flying objects reported are no more than bits of meteorite burning up as they enter the earth's atmosphere." Quoted in Aug. 1967 issue of UFO Contact, my files.

16. Heinz Haber's paperback, "Stars, Men & Atoms", pp. 106-8 equates popular belief in flying saucers to reactions to A-bomb and to fascination with idea of populated planets. "The flying saucer myth springs from these emotions: 7/ it is an echo of the atomic bomb." "...hope appears to be the strongest force that keeps the flying-saucer myth alive."

17. Lyman Spitzer, quoted by Leo Golberg in Int. Sci. Tech. Aug. 1965, p. 27: "Our view of man and his place in the universe depends deeply on whether planetary systems such as our own are exceptional or whether they occur very frequently throughout our Galaxy. In fact, in many ways, the question of how frequently stars are accompanied by planets capable of supporting life is fully as important as the over-all structure of the universe."

18. Harrison Brown, in his September 1964 *Science* article (ETL file) concludes that planetary systems "are far more abundant than we have so far suspected." He indicates that his numbers "may mean that life is far more abundant in our universe than we have previously thought possible." "If it develops that planetary systems are indeed as abundant as this discussion indicates, the search for intelligent extraterrestrial life is placed in a somewhat new perspective. With 10¹¹ planetary systems available in our galaxy, life-forms may well be both abundant and diverse." "If planetary systems are indeed extremely abundant, one might conclude with equal conviction that man is not alone - that his equivalence may occupy hundreds or even thousands of bodies within our galaxy. Listening for evidence of the existence of such forms may indeed prove to be in the long run a profitable and exciting pursuit."

19. In Ley's *Watchers of the Skies*, page 503, he quotes Sir James Jeans, who concluded that "the chance is about a hundred thousand to one against a star's being surrounded by planets." He quotes Sir Arthur Eddington as follows: "Not one of the profusion of stars in their myriad clusters looks down on scenes comparable to those which are passing beneath the rays of the sun." Ley emphasizes that, at the time of these statements, the consensus was that planetary systems could form only if there was a very close encounter between a single star and a binary, obviously an exceedingly rare event.

19-a. "It is probable that their (dolphin's) intelligence is comparable to ours, though in a very strange fashion." We may be faced "with a new class of large brain so dissimilar to ours that we cannot within our lifetime possibly understand its mental processes." - John C. Lilly, quoted by Sullivan in *We Are Not Alone*, p. 245.

19-b. "We submit, rather, that the foregoing line of argument demonstrates that the presence of interstellar signals is entirely consistent with all we now know, and that if signals are present the means of detecting them is now at hand. Few will deny the profound importance, practical and philosophical, which the detection of interstellar communications would have. We therefore feel that a discriminating search for signals deserves a considerable effort. The probability of success is difficult to estimate; but if we never search, the chance of success is zero. - Cocconi and Morrison in *Nature*, 1959. Quoted by Sullivan in WANA p. 196. on p.191 it's indicated that Sir Bernard Lovell dismissed it as frivolous at first.

19-c. "A civilization only a few hundred years more advanced than ours would have technical possibilities by far greater than those available now to us." Cocconi in letter to Lovell 1959, quoted in WANA p. 191. (Cf. quote of Schwartz and Townes on p. 215 *ibid.* that says same but very much more conservatively, in terms of "a few thousand years" edge on us!)

19-d. "...a civilization passes abruptly from a state of no radio ability to one of perfect radio ability. If we could examine a large number of life-bearing planets, we might expect to find in virtually every case either complete ignorance of radio techniques or complete mastery." - Frank Drake, quoted in WANA p. 201.

This might be termed the Technologic Transition by analogy with demographic transition.

19-e. Alistair Cameron terms the possibility of life in other worlds as "currently the greatest question in scientific philosophy." "...there ~~are~~ may be millions of societies more advanced than ourselves in our galaxy alone. If we can now take the next step and communicate with some of these societies, then we can expect to obtain an enormous enrichment of all phases of our sciences and arts. Perhaps we shall also receive valuable lessons in the techniques of stable world governments. Quoted in WANA p. 281.

19-f. "I believe, as to the question of extraterrestrial life, that it is one of the most important and exciting problems that confront us." - Harrison Brown quoted in WANA p. 16.

19-g. Harold Urey on carbonaceous chondrites; "If it can be shown that these hydrocarbons and the 'organized elements' are the residue of living organisms indigenous to the carbonaceous chondrites, this would be the most interesting and indeed astounding fact of all scientific study in recent years." Quoted in WANA 153.

19-h. "Philip Morrison noted that the really logical way (for communicating) may be by 'Q' waves 'that we're going to discover ten years from now.' Or, he said, a way may be found to handle
WANA 210

20. NAS Space Sciences Board (quoted in January-February 1963 Investigator): The discovery (of ETL) will have an enormous and lasting impact on people of every race and culture...Finding and exploring extraterrestrial life should be acclaimed as the top-priority goal of our space program."
21. NY Times, Dec. 15, 1960 quotes 12/14 statement from Brookings Institution re effects of meeting ETL: "It is possible that if the intelligence of these creatures were sufficiently superior to ours, they would choose to have little if any contact with us."
22. In Edwards II, p. 160. Sir Bernard Lovell quoted on UFOs: "It is just escapism. It is all due to the fact that some people are not educated. May 4, 1966, evidently -- after a brief visit to U.S. He told UK newsmen he was shocked at press space devoted to UFOs. "It is an absurd situation that this fallacy, this form of escapism, should be in conflict with such realities as Viet Nam and real Science."
23. Professor Zdenek Kopal, colleague of Lovell's, quoted in 1/18/68 Miami Herald (see clip this file): "So there is absolutely no need to be concerned about anything extra-terrestrial. There is simply nothing to support any such theory....All right, perhaps we on earth are not so unique, perhaps there is another form of life somewhere in a distant part of our galaxy. But let us suppose for a moment that this form of life was so supremely intelligent as to create a craft to bring them all this way across time to our planet. Why they are they being so stupid at the end of the journey...Are they so shy up there that they are afraid to land?"
- Reporter Peter Brock then closes article with his remark: "For me, that -- and the recent remarks about the 'nonsense' of it all by Sir Bernard Lovell -- is good enough." 2-28-68
24. In The Airman, Aug. 1967, Werner von Braun's note: "The Need for Positive Credible Proof" contains following: "But it is that unaccounted two per cent that makes flying saucer enthusiasts cling tenaciously to their conviction. I cannot account for that two per cent either. But a lifetime spent in testing of rockets has taught me to be extremely careful with eyewitness accounts of mishaps during launch. If three experienced observers are questioned after a typical mishap, their accounts of what they saw will differ widely..."
25. "With superhuman knowledge, there must go equally great compassion and tolerance." Arthur C. Clarke, in "Exploration of Space", quoted by Keyhoe in FSC p. 81
26. Any sufficiently advanced technology will appear indistinguishable from magic. Arthur C. Clarke, in Time, 7/19/68 (Said is for will b
27. Asimov, speaking of dangers of rejecting new scientific hypotheses just because don't fit "common sense" (re peculiar properties "ether" had acquired by 1880's): "Such a combination is against "common sense", but this must never be allowed to stand in the way of the acceptance of an

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hypothesis. We experience only a very limited portion of the universe and are sensitive to only a very limited range of phenomena. It is therefore dangerous to suppose that what seems familiar to us is and must be true of all the universe in all its aspects. Thus it is only "common sense" to suppose that the earth is flat and motionless, and this argument was strenuously used to oppose the notion that the earth was spherical and in motion." In Asimov's "Understanding Physics, V. II, Light, Magnetism and Electricity, Signet 1969 (paper). (Same stress on dangers of deciding hypotheses on common sense is stressed in Landau's little book on relativity and in Bondi's. One of bases of rejecting Pasteur's germ theory was commonsense notion that it couldn't be since we'd be inhaling them all the time, etc. 6/1/69)

28. Charles Darwin refused to speculate on ultimate origin of life: "Talk of the origin of life? You might just as well talk about the origin of the elements!" Source:

29. See my "Science" ed. by Rapaport and Wright¹⁸⁷ for Shapley's The Fourth Adjustment. First three are rotundity of earth, geocentricity of our universe, heliocentricity and finally notion we were in midst of stellar universe. Fourth is notion that we are only intelligent life in universe. (One might take as fifth, the notion that life is here engaged in surveillance, and sixth could be that this life is uninterested in us.) 6/1/69.

30. Gell-Mann's Totalitarian Principle: "Anything which is not prohibited is compulsory." - cited in Phys. Today article on tachyons by Bilaniuk and Sudarshan. Smoother variant: Everything that is not impossible is inevitable.

31. Frederick J. Hooven, now at Dartmouth, in letter to me of 3/19/70: "I find it true that scientists will almost invariably fail to predict any new scientific discoveries when they discuss the future (or by implication, the capabilities of a presumably more advanced extra-terrestrial civilization) but will instead predict superhuman accomplishments of us poor engineers on the basis of today's science. One of the funniest of these is the Shklovsky-Sagan book on Life in the Universe, where it is speculated that engineers will one day encircle the sun, or vaporize Jupiter, to obtain energy, but the possibility of some knowledge about space, time, gravity or anti-matter is not touched upon, any one of which is likely to make our quest for energy seem like the idea of breeding faster horses to improve communications." (my italics on main item) 3/70

32. "In two billion years the impossible becomes the inevitable".- Anonymous quote in Sullivan WANA p. 96 re evolution of life.

33. George Gaylord Simpson: "There probably are forms of life on other planetary systems somewhere in the universe, but if so it is unlikely that we can learn anything whatever about them, even as to the bare fact of their real existence."- in WANA p. 109.

34. "The universe is not only queerer than we imagine -- it is queerer than we can imagine." J.B.S. Haldane, quoted by AC Clarke in Promise of Space p. 299.

35. "Why sometimes I've believed as many as six impossible things before breakfast" Queen to Alice.

36. "On the basis of the new estimates of the great abundance of stars and the high probability of millions of planets with highly developed life, we are made aware -- embarrassingly aware--that we may be intellectual minims in the life of the universe. This uncomfortable idea can be further developed by pointing out that sense receptors, in quality quite unknown to us and in fact hardly imaginable, which record phenomena of which we are totally ignorant, may easily exist among the higher sentient organisms of other planets." - Harlow Shapley, View from a Distant Star, p. 81. Also on p. 17 and 158 Shapley stresses the limits of our sense organs.

37. "Doubtless numerous domiciles of life have produced beings more sentient than we, beings more comprehending, more experiencing, and possibly, by their unimaginable standards, more divine than we.....For example, as remarked in an earlier chapter, man does not possess well-developed sense organs to tell him very fully what is what. We have no good physiological register of long electric waves and must resort to gadgetary feelers. We have no bodily organ for sensing directly the ultraviolet radiation or the infrared. Some stars have enormous magnetic fields; ours has a relatively weak one. We have no recognizable magnetic organ; it may naturally be otherwise elsewhere." Shapley in View from a Distant Star p. 158

38. Other quotes from Shapley, *ibid.*

"My simple, perhaps too simple, diagnosis of our failure to comprehend the universe is that we have been and still are bedevilled by a natural and persisting anthropocentrism." p. 36

"..in its early days, Harvard College stood by the geocentric interpretation for more than a century after the appearance of De Revolutionibus Orbium Coelestium." p. 37

On p. 18 Shapley notes that there are 3500 species of ants. Prompts thought that maybe UFOs are interested in ants, not the single human species.

39. "H. G. Well once pointed out," AC Clarke notes on p. 244 of "Coming of the Space Age," that "even if the aliens tell us in all truthfulness that their only intention is to serve mankind, we must endeavor to ascertain whether they wish to serve us baked or fried."

40. "Not since Darwin -- and before him Copernicus -- has science had the opportunity for so great an impact on man's understanding of man." Concluding sentence of entry on ETL in "Encycl. Atm. Sciences and Astrogeology" by T. Sall.

41. Stan Friedman, in CSA hearings p. 216, negates idea that UFOs violate laws of physics by noting: "Piston aircraft can't fly faster than the speed of sound, a conventional dynamite bomb couldn't have wrecked Hiroshima, and a vacuum-tube circuit can't fit on the head of a pin; but surely we don't say that supersonic flight, atom bombs, or microcircuits violate the laws of nature or physics."

Also, on p. 218: "It is interesting to note that most scientific progress has come from doing things differently rather than using

the same technique -- microcircuits aren't just smaller vacuum tubes; lasers aren't just better light bulbs."

(One could extend that general point: Light bulbs weren't just better candles. Locomotives weren't just bigger horses. Nuclear reactors aren't just hotter furnaces. Radar wasn't just an improved binaural ranging method. Electron microscopes aren't made with better optical glass. Modern digital computers aren't old desk calculators with faster-acting gears. The telegraph wasn't a semaphore system with reduced reaction-time. The airplane isn't based on the principles of bird flight per se. Quasars weren't detected with bigger optical telescopes.

42. From Brookings Institution 1961 House Document (in ETH file): "The discovery (of intelligent life in outer space) would certainly be front-page news everywhere; the degree of political or social repercussion would probably depend on leadership's interpretation of (1) its own role, (2) threats to that role, and (3) national and personal opportunities to take advantage of the disruption or reinforcement of the attitudes and values of others."

"The knowledge that life existed in other parts of the universe might lead to a greater unity of men on Earth, based on the 'oneness' of man or on the age-old assumption that any stranger is threatening.."

p. 225: "If superintelligence is discovered, the results become quite unpredictable. It is possible that if the intelligence of these creatures were sufficiently superior to ours, they would choose to have little if any contact with us. On the face of it, there is no reason to believe that we might learn a great deal from them, especially if their physiology and psychology were substantially different from ours."

"It has been speculated that, of all groups, scientists and engineers might be the most devastated by the discovery of relatively superior creatures, since these professions are most clearly associated with the mastery of nature, rather than with the understanding and expression of man. Advanced understanding of nature might vitiate all our theories at the very least, if not also require a culture and perhaps a brain inaccessible to earth scientists."

43. "If we start with as many assumptions about the reasonableness of our friends (ETL), the extraterrestrials, as UFO enthusiasts do, we might end up with English-speaking, anti-Communists white-Protestant centaurians." S. Golomb, quoted p. 241 of Arthur Clarke's Coming of Space Age.

43. Leslie C. Peltier (am. astron and comet discoverer) quoted in Clarke's Coming of Space Age: "...I believe that I would refer to the decade following the halfway mark (of 20th cent.) as the Flying Saucer Fifties. It was a period of mass psychosis, when people wanted desperately to believe that we were not alone -- that other people were watching us. It was not just a field day but a field decade for the crank and crackpot..." (Also good quote re his insistence on having one to look at and take apart before he'd believe UFOs were real. Cf. Condon.

44. Sagan & Shklovski 22: "Finding life beyond the Earth -- particularly intelligent life, although this is highly unlikely on Mars -- wrenches at our secret hope that Man is the pinnacle of creation, a contention that no other species on our planet can now challenge."

45. Sagan & Shklovski p. 22: "It is chastening to read 19th century prognostications of the events of the middle 20th century. Even their most grandiose extrapolations have proved a pale echo of our realities. It strained Jules Verne's imagination to picture giant passenger balloons transporting people through the air over thousands of miles in a period of only a week. He could not imagine contemporary jet transports, which cover the same distance in hours." (Verne predicted TV but it was for about 25th cent. I believe.)

46. Huxley on "belief": "Belief, in the scientific sense of the word, is a serious matter, and needs strong foundations. To say, therefore, in the admitted absence of evidence, that I have any belief as to the mode in which existing forms of life originated, would be using words in the wrong sense... But expectation is permissible where belief is not..."
In Shklovski-Sagan p. 214

47. "If we were to succeed in establishing contact with an extraterrestrial civilization, especially one possessing a high degree of scientific development, the impact on our lives, our society, and our philosophical outlook would be incalculable."
Shklovski-Sagan p. 380

48. George Wald on high probability of ETL and its probable chemical similarity to terrestrial life, in NAS "Sci. Endeavor," pp. 220, 221, 228, 231: "What is perhaps more interesting is the dawning realization that this problem involves universal elements, that life in fact is probably a universal phenomenon, bound to occur wherever in the universe conditions permit and sufficient time has elapsed." / It is "difficult to avoid the conclusion that life is widespread in the universe."

"For these and similar reasons I have become convinced that life everywhere must be based primarily upon carbon, hydrogen, nitrogen, and oxygen, upon an organic chemistry therefore much as on the earth; and that it can arise only in an environment rich in water."

49. Herman Muller, "Life Forms on Other Worlds" in Clarke's "Coming of Space Age" p. 191: "Thus, even without taking into consideration the great differences in the biochemical basis and the lower evolutionary stages between life somewhere else and that on Earth, the higher developments there would be expected to be at least as different from ours in their general pattern and workings as the ordinary dog, the tarantula, and the chambered nautilus of our world are different from one another." (Muller has other germane comments on "multiple solutions", on the bizarre forms to be expected in ETL. But he does concede that sensory and coordinating systems will surely play an important survival role in any higher beings. This was a 1959 article, surprisingly well thought out and informed.)