

cony, looking with astonishment at this strange object, when I suddenly felt as though I were being drawn up towards the object as though by a magnet.'

"Mr. Fili cried out in terror and awakened the neighbours. Meanwhile, the luminous object shot straight up into the sky and vanished in the twinkling of an eye. It emitted sparks as it rose up.

Another case in Tehran

"While the foregoing reports were being assembled, we received a visit this morning from a resident of Salsabil Street, also in this Capital. Very worried and frightened, this man told us that this morning, as he opened his front door, he saw a pale-coloured cigar-shaped object moving slowly through the sky. As it changed direction, he saw multi-coloured flashes of light come from both sides of it."

NOTES

¹ In the Iranian language *poshghabe parandeh* : "flying

dish", or "bird-dish".

² This place lies at 33/55 N, 50/30 E, and lies due south of Tehran.

³ Shamsabad, near Tehran, is at 35/14 N, 51/44 E.

⁴ There are several cases on record in which witnesses speak of "faces or masks like elephant's trunks", and one's immediate reaction is to assume that this relates in fact to some sort of "gas mask" or breathing device. See, for example, pp. 191/192 of Keyhoe's *Flying Saucer Conspiracy* (British edition) for an Italian report of **this same period**. A disc landed one night, in the early part of November 1954, on a sports field in Italy. By its bright glow the Italian witnesses could see around the craft three or four small entities wearing transparent helmets, and several said that they had had a clear view of the face of one of them, **which looked like a little elephant**. When the villagers charged down upon the entities, the latter quickly got into the saucer and took off.

These two reports, from Italy and Iran respectively, and within a fortnight of each other, are clearly part of the great "French Wave" of 1954. It would be interesting to know whether any of the still undiscovered French cases also contain references to an "elephant's trunk"!

A LONG, COOL LOOK AT ALIEN INTELLIGENCES

Part I—The Non-uniqueness of Man

by C. Maxwell Cade

IT has taken approximately 2500 million years for biological life to evolve upon Earth and to attain a state of technological development where it is possible to break away from the gravitational pull of our planet and to visit other worlds. Admittedly, we have so far been restricted to the use of unmanned vehicles, but in the present state of space-technology even the most conservative estimates suggest that within a decade man will have explored the Moon, and possibly the nearer planets.

These possibilities of interplanetary flight have only been known to us for about 30 years, and the possibilities of communication between worlds have only been known for about 60. Out of the vast time of 2500 million years, required for intelligent beings to evolve from inorganic elements, the time required to develop from a condition where we had no knowledge at all of communication by means of electromagnetic radiation to the condition where we can transmit television pictures from Mars to the Earth, is less than 100 years. The same brief period has also covered the transition from no knowledge of powered flight, to the launching of highly-sophisticated inter-

planetary probes; and also the transition from no knowledge of electronics to the development of electronic computers which begin to approach human thinking ability.

We are still a long way from having control of our environment, but with current progress with rain-making by chemical "seeding" of clouds, and the successful French work on the induction of artificial thunderstorms and tornadoes, it is improbable that the final attainment will take more than a century or so. After that, unless irresponsibility on the part of our leaders hurls us into a final fratricidal war, it seems reasonable to look forward to a long period during which we enjoy the mastery of ourselves and our environment. Earth will remain habitable for many thousands of millions of years yet, so that, looking from the distant past to the distant future, it seems that the change-over from a non-technological society to one with complete control of its home planet is a process which occupies the merest twinkling of an eye on the time-scale of evolving life.

The consequence of all this is that the possibility of our ever discovering—or being discovered by—a race of extraterrestrial beings in a similar

state of development to our own is vanishingly small. The phase of transition from no technology to mastery of interplanetary flight is so brief that it can virtually be ignored in relation to the time for which a planet can remain habitable. The only race which could discover us would be one with command of space flight, and thus of a very high technical order; the only races which we may discover ourselves will be either those who have not yet invented machines, or races of tremendously advanced science. It seems very probable, however, that the latter would be more likely to discover us first—they may, in fact, have done so.

The probability of finding life in the course of an interstellar exploration is obviously related to the time for which communities endure. Do they invariably destroy themselves within a few decades of discovering atomic energy? Or do they survive the phase (through which Earth is now passing) during which technology develops faster than compassion, and go on to heights of sociological attainment which are beyond our brutish comprehension? In view of the many opportunities for the triumph of brute force over reason, or even the triumph of inanimate nature over organised life, which have failed to prevent the evolution of Man, it seems probable that many communities will continue to develop until, in the course of astronomical ages, their planet is finally engulfed in the death-struggles of its Sun.

How many Superior Communities are there in the Universe? We can never know, but we can estimate probabilities. We have to take into account many factors, including the following: the time for which the central star remains on the Main Sequence; the volume of the "habitable zone" surrounding the star (within which temperatures remain at a moderate level); the ellipticity of planetary orbits, which may subject them to great extremes of heat and cold; the planetary mass; the special conditions which may exist in double- and multiple-star systems. When all these factors are considered, it works out that only about 2 per cent of binary and multiple-star systems can have habitable planets, and about ten per cent of single stars. In other words, since about 67 per cent of stars are binary or multiple, only about 4.5 per cent of all stars can give rise to intelligent life. However, with the immense number of stars which go to make up a galaxy—about 100,000 million—some thousands of millions of stars, in each of the 100,000 million galaxies in the Universe, could have habitable planets. Although one must be very careful not to be too dogmatic about what is or is not possible, it is highly improbable that intergalactic communication, let alone intergalactic travel, will ever be achieved.

We will therefore confine our speculations to our own Milky Way Galaxy.

Within our own galaxy there are some 4,000 million or more stars capable of supporting planetary systems containing one or more habitable planets. Of these stars, many are far older than the Solar System, perhaps as much as 5,000 million or even 10,000 million years older. This implies that superior communities could have had the Earth under surveillance from the earliest geological times, and it is perfectly possible that, as Arthur C. Clarke suggested in one of his exciting books, alien space vessels may have descended to Earth's surface countless times in the course of the ages. How would such surveillance be carried out? We are not really in a position even to imagine the possible achievements of a race which has developed science and engineering for millions of years, any more than a Neanderthaler could have imagined the intricacies of international finance or of atomic energy power plants. It is almost certain that, if such ancient races really do exist, they will have linked up in some sort of interstellar community. Our own knowledge of physics is so elementary that what to us are insuperable problems (escaping from large gravitational fields, and exceeding the velocity of light) may well have yielded to the analysis of more mature minds.

In so far as we can extrapolate current lines of progress, it seems more likely that interstellar exploration—involving journeys of hundreds of thousands of light-years—will be achieved by highly-evolved machines, rather than by biological organisms which have somehow made themselves immune to the effects of age. By analogy from our own modest interplanetary probes, we may imagine vast, complex vehicles, capable of analysing, photographing, recording, computing, and finally transmitting back to their bases neatly documented surveys of all the relevant data. The fingerprints of our new-born civilisation may already be well-known to the Records Department of some vastly distant Elder World.

Before proceeding to further consideration of the ways in which such surveillance would be conducted, we must realise that these ways will vary according to the types of entity who wish to know about us. We have seen that there is a high probability for the existence of intelligences in other parts of the universe, but it does not follow that they must bear any resemblance to ourselves. If Man is non-unique, it is because he is one of many intelligent races, not because he is one of many humanoid, or even biological species. In Part II of this article we will consider some of the other forms which intelligent organisms might adopt.