Alberoni et al. at the Institute for Policy Studies-interfaced review "Tempi Moderni," which in 1970 became the apologist for terror actions around the world), and others.

In the midst of a civic environment described by both Alberoni and the Amati investigation as hostile towards the radical department, the students and faculty were thrust into ghetto life. There arose collectives, the Negative University of Curcio, the Critical University of Rostagno. Students and teachers together planned pedagogical activities (as results from Alberoni's own working documents) to reinforce the new collective entity, the "movement."

In an early phase, the movement analyzes itself, small groups of students together with teachers hold semi-psychoanalytic sessions in which the old social identity, already lacerated by the hostile Trento environment, is entirely uprooted and destroyed. The psychosis which comes is created by this is socially controlled by the group, which little by little replaces the old social context as a pole of reference, or "object." then in 1969 studies are oriented in a new direction: from internal discussion turns outward, toward the institutions belonging to the old social context, and its moves to provoke them. The courts, the army, the school, and so forth constitute the targets, the "weak objects" against which aggressivity must be unleashed.

At the end of this "student phase," the "new men" of Trento are deployed, as in a coordinated plan, into urban centers. According to Amati's report, in fact, "we witness, as a consequence, the depopulating of Trento (University) and the concentration radially around those industrial centers of the north (especially Turin and Milan, but also Genoa) of a substantial human component, near those metropolitan centers where the harshest social struggles of the working-class movement were going on."

Curio's group, after many mutations in name and participants, evolved into the Red Brigades, while the Rostagno wing consolidated itself as Lotta Continua. Still others, between Trento and other working-class centers, started the NAP, and so forth. Meanwhile, in 1970, with its function exhausted, the Trento Department of Sociology closed enrollments. A generation of "new men," of terrorists, was already deployed throughout the national territory, all the emanation of one "cultural project," the Sociology Institute of Trento.

Alberoni himself, having left Trento, has not forgotten his products. On the pages of Corriere della Sera and more recently of La Repubblica, he writes commentaries on the actions of the Brigaders. He praises the various Curcios, Rostagnos, and so forth as "charismatic leaders," and he supplies the "sociological" explanation for terrorism, according to which it is an "inevitable" product of "society."

Viking And Beyond

The Necessity Of Space Exploration

Part-1

by Eric Lerner

July 28 (NSIPS) — The exploration of space which the Viking mission exemplifies is not just a fine, exciting thing — it is a necessity for humanity. The Viking landing itself is a direct step in a process which will lead in 5 years to a tremendous development of the resources available to mankind. By the second quarter of the next century, Mars can be supporting a booming colony of hundreds of millions of people, its forbidding cold and thin atmosphere replaced by a climate superior to many found on earth, its barrenness replaced with flourishing life. The establishment of such colonies on Mars and beyond will be the main necessary task of the human race as soon as we have achieved a fusion-based economy.

Why Space?

Why do we **need** to go into space? We need two things from space: scientific knowledge and resources. The first requirement is fairly obvious. It is only from comparing the development of various planets and their satellites and, hopefully, the life on them, that we can gain further insight into how our own planet developed and how life itself evolved — scientific questions of the most evident profound implications for technology and for human existence generally. But it is equally clear that we need the resources of other planets, and above all, habitable land for a growing population. While the rantings of the zero-growthers about "a finite planet" are pure garbage as far as immediate energy resources and living space go, there are evident limits to how many people can physically fit on a single planet. This does not mean we must resign ourselves to stagnation — we will simply have to move somewhere else.

It's easy to calculate that this is a problem we will have to face in the relatively near future. The total urbanization of the earth would enable the population to grow to the area of a few hundred billions, utilizing hydroponics and other concentrated, land-saving techniques for food production. But the actual optimal population level of the earth is far lower. The most important reason is the earth's increasing difficulty in handling extremely large energy flows. While a great deal can be done to alleviate such problems, at a certain point these actions will become far more costly than the colonization of other planets. Secondly, the cultural values of maintaining very large areas for recreational purposes and maintaining a variety of natural environments will become increasingly important with the development of standard of living and education levels. On this basis, it is likely that intense urbanization can cover no more than about 5 per cent of the earth's habitable areas and therefore that an optimal population will be in the area of 15 to 25 billion people, a level which will probably be achieved in about 50 years.

This means that by the year 2025 or so, a thriving colony on Mars will be taking as immigrants the bulk of earth's population growth of hundreds of millions a year! Therefore, by that time, Mars will have had to have been made habitable by a previous smaller colonization effort starting **no later** than about the end of this century. This, in turn, means manned exploration of Mars beginning by the early 1990s or late 1980s, immediately after the development of a fusion-based economy on earth. Such a rapid course of space exploration and colonization is possible only on a previously established industrial and technological base far larger than that of the present, with a far more highly skilled and educated work force and energy growth rates on the order of 25 per cent or more a year. In short, the prerequisite for such necessary medium-term projects as the colonization of Mars is precisely the task of reconstruction we have already proposed for the transition to fusion power.

Unfortunately, the U.S. space program has never been

principally motivated by the necessity for space exploration, at least not at the top policy-making levels. Instead, it has been guided mostly by a mixture of political, economic and military pressures which have hobbled it throughout its existence. The generally misguided and wasteful manned space program, for example, has gobbled up most of the resources, despite the evident fact that manned space travel through the solar system is not a very practical proposition prior to the development of fusion-powered vehicles. By contrast, the scientifically most worthwhile part of the space program, primarily the unmanned missions to the moon, Mars, Venus, and Jupiter have always tended to be the step-children of NASA — their very existence in almost every case has been the result of bitter battles waged by small groups of scientists committed to space exploration. The most criminal example of this policy is embodied in current NASA advanced planning, which calls for **no further flights to Mars for the next 13 years after Viking 2!**

As the Viking mission has dramatized, NASA's priorities must be thoroughly revamped — sabotage of this sort cannot be tolerated.

From any logical standpoint, the next step to take beyond Viking would be, in two or three years, the landing of a mobile robot on Mars, which can be directed a variety of different sites, and whose improved instrumentation can be based on the findings of the current Viking missions. This has already been proposed by Viking director James Martin, and would be an excellent opportunity for cooperative efforts with the Soviet Union, which has had much successful experience with such mobile robots in the exploration of the moon. Simultaneously, for the same late 1970s period, a more in-depth exploration of Venus, using cloud-piercing radar from a vehicle in orbit around the planet, should be attempted, with additional missions to the highly intriguing large satellites of Jupiter and Saturn, some of which have dense atmospheres and may be of interest biologically.

While this systematic surveying program is being carried out by robots, NASA can be preparing for manned flight mainly through participation in the broader effort to develop fusion power and specific planning for the development of fusion-based rocket engines. This would lay the basis for manned exploration of Mars and later colonization during the 1990s.

Martian Climate

Within that context of necessary exploration of the solar system, the Viking mission is likely to give clues to some of the most interesting scientific puzzles on any of the planets. The two key questions that have to be answered about Mars are: first, whether there is life (we'll deal with this in the next issue); and, second, where did the water go? For the climate of Mars has evidently undergone some rather catastrophic changes.

The surface of Mars, as viewed from the Viking before it landed, shows unmistakeable evidence of the one-time existence of abundant flowing water. Huge channels have been gouged out, either by mammoth rivers, or by brief but disastrous floods, similar to those which occur on earth when natural dams of ice burst through, releasing lake water. It is also clear that these floods happened many million years ago, since the channel bottoms are pitted with fresher, and less-eroded craters. Today, by contrast, liquid water not only does not, but could not, exist on Mars. Mars atmospheric pressure is only one one-hundredth that of Earth, and thus is below the point where water can exist in liquid form. Furthermore, over the vast majority of the planet, the temperatures are far too cold for running water, dropping at the poles to nearly 200 degrees below zero Farenheit (minus 130 degrees centigrade). So the question is — how did the water that made the channels exist and what happened to it?

The answer may lie in the polar ice caps. At present, Mars has permanent ice caps, consisting mainly of frozen carbon dioxide (dry ice). The thin atmosphere is also mainly carbon dioxide. The frigid ice caps at present tend to perpetuate their own cold, both by reflecting most of the sunligt they receive, and — since most of the atmosphere freezes out at the poles — because the air is too thin to carry much heat from the equator to the poles. The astronomer Carl Sagan has proposed that if, for some temporary reason, the poles become slightly heated, this would set in motion a self-feeding expansion of energy flow. The heated ice caps would release some carbon dioxide to the atmosphere, increasing its ability to carry heat from the equator, causing further heating of the ice caps, and so on. The trigger for this chain of events might be the Martian dust storms dirtying the ice caps sufficiently that they absorb more solar radiation. Once in motion, this process would continue to accelerate with the thickening atmosphere acting to trap more of the solar heat and further warming the planet. Eventually a new metastable state would be achieved in which all of the carbon dioxide is in the atmosphere. At that point, the atmosphere would be nearly as thick as that of earth, and both pressure and temperature would be suitable for the maintenance of liquid water.

Conversely, a sudden cooling of the caps might set in motion a reverse cycle, leading to a recreation of the Martian dry Ice Age.

What is striking about this theory is that it postulates a metastable climate with features similar to that of earth. Earth also has a warm climatic mode, in which no water-ice caps exist, and the present cold climate, with ice caps, with the Ice Age as a special extreme of that cold mode. In the case of the earth, this ice age does not lead to any catastrophic effects on water, since the earth, being closer to the sun, is too warm for precipitation of carbon dioxide. Equally important, due to the effect of eons of photosynthesis, earth's initial carbon dioxide atmosphere has been overwhelmingly turned to oxygen. Combined with nitrogen, our atmosphere has a very low freezing point, far below any Ice Age climates.

The study of the possible shifts in Martian climate will have great significance for the search for life there, and for the understanding of similar self-feeding climatic events on earth, including the present drought.

Additionally, the possibility of a second, more favorable state of Martian climate opens the possibility of deliberately "engineering" the shift from the present cold and barren Mars to one much warmer and with an environment far more conducive both to any native form of life that may exist, and to colonization.