

What may be expected on the lunar surface? The best thinking indicates that the vehicle will have a somewhat uncertain landing on a surface of dubious characteristics. It is generally agreed, however, that the surface will be hotter than boiling water during the day and colder than dry ice during the night, both of these periods lasting about 14 days. There is little doubt that the environment will be airless, waterless, and, except possibly for some organic compounds similar to those in living things, lifeless. The elements necessary to provide an environment capable of life support will need to accompany the vehicle and occupants, thus limiting the tenure of the spacemen on the lunar surface.

Because the moon is a smaller sphere than the earth, its curvature is such that the horizon is approximately one mile distant, thus limiting visual communication to about one mile. Direct auditory communication will be impossible since there is no air to carry soundwaves. Whether the legendary Indian ear-to-ground technique for listening for hoofbeats may be adapted for communication is a matter of conjecture, but probably unlikely. Since radio waves travel in straight lines and there is no Kennelly-Heaviside layer in the atmosphere to reflect waves back to the lunar surface, ordinary radio communication beyond the distance of a mile will not be feasible. Thus, 50 billion dollars is indeed a handsome sum to place spacemen in such an unfriendly environment with such restricted orientation and mobility. Nevertheless, it is being expended with little complaint.

Some persons believe that October 4, 1957, may best be viewed as a day of irony. Less than 10 years after the ignominious collapse of Vanguard I, science and technology, marshalled in a vast crash effort, have produced feats of "orbitalmanship" for the United States not even imagined at that earlier date. More than one hundred different space vehicles have been placed in orbit. Spacemen have cavorted at the end of synthetic umbilical cords outside space vehicles to the delight of television viewers and their compatriots inside.

Yet with at least 90 million Americans having some kind of eye trouble, in 3.5 million of whom the trouble is serious, and with more than 300 thousand persons totally blind, less than 10 million dollars per year are being spent in the attempt to find causes, preventives and control for diseases that destroy sight. Probably considerably less is spent for research designed to provide some type of replacement for that loss of sight. The greatest irony is that there are at least 50,000 times as many persons with relatively inadequate means for mobility living in a modestly satisfactory environment, as there will be spacemen struggling to survive in a hostile environment. A comparison of the fiscal support given the two programs is ample evidence of cultural blindness.

This cultural blindness is evident in the problems related to real blindness, particularly concerning the development of prosthetic devices for blindness as compared with those for other sensory handicaps. Research on prosthetic devices to aid the auditory handicapped has been directed toward helping the deaf to hear better, and from this research, the modern hearing aid has emerged. Likewise, research on devices to aid the orthopedically handicapped has been directed toward helping the individual walk about better or to grasp objects more effectively, to wit, the development of artificial limbs. However, with blindness, most of the effort has been directed toward helping the individual *feel* his way about better.

It is noteworthy that a special Gallup poll conducted for Research to Prevent Blindness, Inc. revealed that next to cancer, the affliction most feared by American people is blindness.

Yet, in spite of the inexorable conclusions that must be drawn, a scientific attack on the problems of blindness using the total available resources of science and technology is yet to be marshalled. The approaches being taken and the activities underway epitomize the philosophy of "little think."

Despite these anomalies, October 4, 1967, may be viewed with optimism from several aspects. The crash effort in science and technology for competing in the Space Age has produced many significant developments that indicate cautious optimism for "substitute sight." *It should be noted here that the writer uses the term "substitute sight," not substitute for sight.* Specifically it is hypothesized that the artificial eye with accompanying sight may be less "blue sky" than may have been previously surmised by rational persons. Such possibilities are based on changing "little think" to "Big Think." This suggests the application of the imagination and scientific knowhow used in photographing Mars on the problem dealt with here. In brief, the dissipation of cultural blindness could lead to the alleviation of real blindness, at least to some degree.