Passeriformes Hirundinidae), *Annals of the Entomological Society of America* 57, 624-638 (1964).

R. L. Usinger, P. Wygodzinsky, and R. E. Ryckman, The Biosystematics of Triatominae, *Annual Review of Entomology* 11, 309-330 (1966).

Henry D. Brodie and R. E. Ryckman, Molecular Taxonomy of Triatominae, *Journal of Medical Entomology* 4, 497-515 (1967).

5 Robert V. Gentry, Extinct Radioactivity and the Discovery of a New Pleochroic Halo, *Nature* 213, 487-489 (1967).

6 J. F. Evernden, D. E. Savage, G. H. Curtis, and G. T. James, Potassium-argon Dates and the Cenozoic Mammalian Chronology of North America, *American Journal of Science* 262, 145-198 (1964).

7 P. Edgar Hare and R. M. Mitterer, Non-protein Amino Acids in Fossil Shells, *Carnegie Institution of Washington Yearbook* 65, 362-364 (1965-66).

P. Edgar Hare and P. H. Abelson, Racemization of Amino Acids in Fossil Shells, Ibid. 66, 526-528 (1966-67).

P. Edgar Hare and R. M. Mitterer, Laboratory Simulation of Amino Acid Diagenesis in Fossils, Ibid. 67, 205-208 (1967-68).

8 Duane T. Gish, Has Man Created Life? *Spectrum* 1, 16-22 (winter 1969).

9 Richard M. Ritland, *Meaning in Nature* (Washington, D. C.: Department of Education, General Conference of Seventh-day Adventists, 1966).

10 G. A. Kerkut, *Implications of Evolution* (New York: Pergamon Press, 1960).

To Live or To Die?

DONALD E. HALL

POPULATION, EVOLUTION, AND BIRTH CONTROL: A COLLAGE OF CONTROVERSIAL IDEAS
Assembled by Garrett Hardin
W. H. Freeman and Company, San Francisco, second edition 1969 404 pp
$6.00 cloth $2.95 paper

Are we justified in doing good when the foreseeable consequence is evil? This inversion of the usual question of means-and-end is suggested by A. V. Hill as the present ethical dilemma of science, and it makes for some disquieting meditation when its full implications are realized.

Consider the experience of Gerald Winfield, who was a medical missionary in China for many years. He wrote later of being haunted by the dying cries of a tubercular beggar to whom he had several times given money. He had felt ashamed to do so, "ashamed because I know that I was powerless to give enough to do anything more than prolong the slow pain of his dying — yet ashamed not to make some gesture of sympathy."

These wrenching feelings have surely been shared by many missionaries in undeveloped countries — and perhaps in a small way by a large number of us who have seen pockets of poverty and disease without leaving the United States. What results should we really expect in the long run from our attempts to do "humanitarian" work?

Winfield had certainly "helped" many individuals. But finally he was forced to doubt whether he had really done any favor for the human race as a whole. Sadly he concluded that "existing checks on population growth must not be removed until the controls exerted by direct family limitation and industrialization are well established. . . . The death rate must not be reduced too quickly. . . . The first objective of the medical-health program must *not* be the simple, natural one of saving lives."

This seeming callousness must be understood in the light of the Utterly Dismal Theorem propounded by Kenneth Boulding: If there is no deterrent to population growth but starvation and misery, then any technological improvement or simple reduction in death rate can only have "the ultimate effect of increasing the sum of human misery, as it permits a larger population to live in precisely the same state of misery and starvation as before the change."

One might at first suggest that we attack starvation itself through crash programs in agricultural technology. Indeed, we find a review in this journal saying: "Perhaps the day is at hand when those trained in agriculture will have at least as much to contribute [to the humanitarian work of the church] as those trained in public health or medicine."[1] But this kind of improvement is not exempt from the Utterly Dismal Theorem either — since any increase in food supply will only *temporarily* raise nutritional standards; this will raise birth rates and life expectancies; and ultimately the additional food will only make it possible for *more* people to starve. Shall we, then, withhold our approval from the agricultural experts as well as from the physician?

Such is the stimulation of thought to be found in these readings collected by Garrett Hardin. There are 123, ranging from single sentences to a few essays exceeding ten pages. The variety makes the book much more interesting and readable than a book of equal size written by a single author. Hardin has provided occasional paragraphs of background and transition to give unity to the readings, and he succeeds in establishing a total effect that strongly mirrors his own opinions. Not being a social scientist, I cannot pretend to pass judgment on the technical aspects of the book, but I can report my enjoyment as a nonspecialist.

The main emphasis is on the problem of exploding population and the solution of birth control. (This, almost by definition, is the only solution in the human domain, unless one considers it acceptable to plan on continuing famines, epidemics, or wars indefinitely, and, in fact, at an increased level.) The middle section of the book, on evolution, is relatively brief and in a supporting role.

Probably the most outstanding essays in the book are Hardin's own. One of these, "The Ghost of Authority," is addressed to the difficult relation that exists between the Roman Catholic Church, as an organization, and its thinking adherents. But much in the essay could be true, on a smaller scale, of Seventh-day Adventists. Many of us would do well to learn something from it about the individual's responsibility for his acceptance of authority.

A tremendous (yet potentially joyful) burden devolves on every person, in spite of any efforts he may make to escape it, to ensure that his beliefs are really his own and are held for valid reasons. Hardin strikingly warns of one of the difficulties of this task: "Every cluster of human beliefs is a homeostatic system with immense powers of repair in the face of logical attack. Put another way, each truth that is contrary to a well established system has to be discovered over and over, each new statement of it being speedily transmuted into innocuous intellectual isotopes by the internal forces of Freudian denial."

A similar thought is brought out in his explanation of some of the processes involved in the acceptance a century ago of "Darwinism." Our world view ordinarily includes a number of beliefs that are more inherited than thought out, and these, through familiarity if nothing else, come to have not only security value but even "beauty" at a subconscious level. Says Hardin: "We may be unaware of this beauty until a new myth is offered as an alternative — and then we squeal like stuck pigs. No matter how great the intellectual vigor of a new idea, it doesn't have a chance of acceptance until it too has been invested with beauty." There may be a lesson here for the young and educated who see points of Seventh-day Adventist theology and working policy that they would like to improve.

What could we responsibly conclude with regard to population control measures, in the light of moral concepts we now consider beautiful?

First, we might feel rather encouraged about upholding our historical standards of sexual morality by reading Ely Van de Warker's study of the Oneida Community. It is not at all prejudiced against the free love practices of this unique group, and it is in fact preceded by an apologia from John Humphrey Noyes, the community's founder. But the most eloquent voice is that of an unnamed woman who had lived a number of years at Oneida and who gave frank and lengthy answers to some questions asked by Doctor Van de Warker. She reveals — seemingly with no ill intent, almost unconsciously — that, notwithstanding Noyes' theories, the practical outworking of the plan involved a great deal of jealousy, favoritism, and intrigue. Those who outwardly subscribed to equal sexual sharing found that their inward feelings soon ran in very unequal channels.

Second, we might reexamine our wonted devotion to individual freedom. Can we expect by timid moves here and there to solve our population problems while retaining as an axiom full freedom of choice? We are warned by Lord Morley that "small reforms are the worst enemies of great reforms." Hardin's application of this idea is to the effect that the present programs carried on by Planned Parenthood are only timid half-measures, since they do not aggressively attempt to change the minds of those who think they want more children when they already have enough.

We might add that even the rich need to have drilled into them that mere "ability to provide" is no excuse for breeding to the limit of their desires in an overpopulated world. It is quite dangerous to be lulled into thinking that we will have success in controlling population growth without measures far more radical than Planned Parenthood clinics.

Hardin discusses this problem in his concluding essay, "The Tragedy of the Commons," which must be read in its entirety to be fully appreciated. He is convinced that

births must be controlled by nothing less than outright coercion, though hopefully "mutual coercion, mutually agreed upon." A more attractive solution might be the development of such widespread Christian love that each individual would refrain from full use of his procreative ability out of regard for the well-being of his fellow men.

But neither we nor Hardin (although for different reasons) are such optimists as to take this possibility seriously, and we are back to coercion. If we wait too long, this coercion will be imposed without regard to our wishes. We would best get busy on voluntarily relinquishing the freedom to breed.

REFERENCE

1 Bruce T. Trumbo, A Matter of Fertility, *Spectrum* 1, 59-63 (winter 1969).

A Physicist and Religion

RAY HEFFERLIN

ISSUES IN SCIENCE AND RELIGION
By Ian G. Barbour
Prentice-Hall, Inc., Englewood Cliffs, New Jersey, 1966 470 pp $5.85

This book was written by a professor of physics, who is the chairman of a religion department, as a textbook to be used both in state universities and in theological seminaries.[1] It has four parts: (A) a historical part; (B) a brief summary of relevant religious views in the present century; (C) a section on method, wherein the methods of science, of the humanities, and of religion are portrayed as adjacent colors of a spectrum; and (D) a portion on the religious implications of the theories of science, particularly implications for our view of the role of God in nature.

My interest in this book began long before it was written, during my fourteen years of teaching physics at Southern Missionary College and (during a leave of absence) at the University of Tennessee at Chattanooga. It has been a constant pleasure to feel my students' curiosity — about the ethics of professional science (weapons research, funding of science in parochial schools), cosmology ("big bang" theory, "heat death" of the universe), changes in the stellar universe (slowing of rotation of the earth, novae), the nature of the spiritual world (fourth or other dimension?), to mention a few specifics.

I have also shared the pain of some of these same students who, without the support of sincere, consistent friends of like faith, found themselves unprepared to meet the sophisticated, predominantly irreligious atmosphere of the graduate school. I asked