WHY CIVILIZATIONS SELF-DESTRUCT

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Giant intellects like Gibbon, Spengler and Toynbee have given us complex and tortuous reasons for the decline of civilizations. Dr. Pendell presents us with a simple one. Civilizations fall because the less capable slice of the population regularly outbreeds the more capable. In precivilized times nature weeds out the unfit and eventually produces a superior variety of men whose intelligence and industriousness are channeled into constructing an advanced social order that defeats nature's best-laid plans by protecting instead of eliminating the unfit. The outcome is that in several generations the protected outnumber the protectors.

Dr. Pendell scours the annals of history to prove his point, after beginning his seminal study with a remarkable analysis of the inborn, polarized egotistic and altruistic drives which are the biological basis for both the building and unbuilding of civilizations.

Most importantly, Dr. Pendell offers us ways and means to stop the historic and hitherto unstoppable processes of social entropy. One of his most intriguing—and most controversial—remedies is a genetically oriented marriage law to raise the birthrate of our better human specimens and substantially lower the proliferation rate of the civilization-destroying people who can neither provide for themselves nor their offspring.

Cover Illustrations: Reconstruction of the Ziggurat of Ur-Nammu and Shulgi at Ur (Third Dynasty, 2200–2100 B.C.), drawing by Claude Abeille after a model by Wooley. The Ziggurat today (photo by Andre Parrott).

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HOWARD ALLEN CAPE CANAVERAL

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Preface

A pygmy on a giant's shoulders can see the farther of the two.

I make no claim to being a pygmy, but in writing these pages I have stood on the shoulders of giants of scholarship, first in one and then in another of the many colorful subdivisions of learning. I had to cover so much territory because the tragedy of our time is not apparent in partial or short-term contexts. The folly of our political, social and economic policies can be clearly seen only if they are evaluated according to their overall results—delayed results as well as early results, obscured results as well as obvious results.

Related to the shortsightedness of our policies are our attitudes toward the structure of society. Hopefully the reader will realize, as he gets further into the subject, that social structure is what holds civilization together.

How we as individuals came to be what we are, came to have such thoughts and abilities as we have, will be emphasized, perhaps overemphasized, in the early chapters of this book. This is because the ups and downs of civilizations depend in large part on predictable changes in the abilities and ideas of individuals.

We must learn a little about ourselves before we can understand what we have done and are doing to ourselves.

Elmer Pendell

Acknowledgements

To Dr. Alta Millican, Dean of Library Science at Jacksonville State University and her efficient staff.

To Dr. Paul S. Clarkson, Curator of Rare Books and Special Collections at Clark University.

To Dr. S. Colum Gilfillan, author of *The Coldward Course of Progress,* who took time out from his own writings to criticize my manuscript in detail.

To Dr. Max Rafferty, Dean of the School of Education of Troy State University.

To William G. Simpson, scholar and friend, for early constructive criticism.

To Dr. Jacob O. Kamm, member of Ohio Board of Regents, who suggested important improvements.

To Dorothy Boicourt, poet, who prompted helpful changes.

To The Honorable Bill Nichols, U.S. Representative from Alabama, for his assistance in obtaining needed source material.

To the faculty members and staff members of Jacksonville State University whose discussions contributed more to my thinking than they realized.

To the Census Bureau and to the uncounted scholars whose writings were building blocks for my own findings.

To Mary Klinefelter, for excellent secretarial work.

Chapter 1

The Individual on Center Stage

The fly sat upon the axle-tree of the chariot wheel and said, What a dust do I raise!

Francis Bacon

Everyone has struggled with the question, Who am I? It has been said that, if we could come up with the answer, "everything else would fall in place."

Our minds have two phases, which are often in conflict, though not to the extent of turning us into Dr. Jekylls and Mr. Hydes. One phase generates motivations of the kind which look after self and glorify the I. The other generates social dispositions, such as sympathy and the desire for approval. To learn about civilizations, we need to understand the *social* side of mind. But to know the social side we have to know the ego side too. So we will first focus our attention on the latter.

Are you—for your purposes—*on center stage?* Is the world, as you appraise it, centered on you?

You might ask, how could it be otherwise? You have to make your value judgments, your comparisons, your appraisals, from your point of view—from your place on the axle of the chariot wheel.

The seat of your self-importance is your *consciousness.* Could life have any meaning to you—to anybody—without consciousness? To comprehend life and to "know thyself"

require that in some measure we understand the meaning of consciousness. Let's try.

Consciousness, a functioning of brain cells, is an awareness, a receptivity, a state of readiness. We have to be ready to record experience. If we say we have an inborn tape recorder, only the word "tape" is a figure of speech. Consciousness not only *records* experience; it plays back previous experience.

Other functions of consciousness are comparing, choosing, classifying, evaluating, controlling, deciding, analyzing, discriminating, distinguishing, guiding, managing, organizing, planning, predicting, synthesizing, summarizing and systematizing. Some of these overlap. Most imply purposive action. Since your consciousness is the organizer of your mental workshop, if you are not efficient, blame it on your organizer.

Remembering is a crucial part of consciousness, that is, the process of recalling information from the subconscious. Before you make up your mind about something, the subconscious may be commanded to check on similar decisions in the past. More often, you accept conclusions shaped by your attitudes, and make your present decisions accordingly, at a great saving in time and mental energy.

A derivative function of consciousness is remembering for its own sake, for the sheer nostalgic fun of it—singing the old songs, mooning over the pictures in college yearbooks, rehashing the victories and defeats of days gone by. You are not limited to the satisfactions of the present. Even if today goes badly, you are able to take pride in the cumulative successes of the past. Your consciousness is the safety deposit box of your most treasured moments.

The level of consciousness depends on intelligence. *He lives most who thinks most.* The more intelligent you are the better your consciousness functions. The better your consciousness functions the more intelligent you are.

Our neural systems operate, at least in part, on a form of electric energy. Consciousness itself seems to run en-

tirely on electricity. Sometimes, when calling upon the brain and nerve cells needed to look up a word in a dictionary, it narrows down and acts like a spotlight. At other times, it penetrates a problem like a laser beam. Then, performing as a spotlight again, it may be checking over the individual's preparations to leave for home in the rain. In all cases consciousness is organizing, organizing, organizing. Though literary critics speak of a stream of consciousness, its sudden changes of content make the spotlight metaphor more apt. Not until you go to sleep does the light go out.

Sleep itself deserves some consideration. It is the absence of consciousness—as darkness is the absence of light. The young child may resist his nap, considering it an interruption of his existence. He fights to retain consciousness as one might fight to retain life. It is a bitter struggle—between the hereditary urge to remain conscious, to hang on to life, and the hereditary urge to let go, and go to sleep.

Consciousness is inherited in the sense that it is an attribute of specialized brain cells. Its efficiency is partly inherited, and so are its tendencies, which differ among individuals. Consciousness is not passive, it does not wait for outside forces to act upon it. It has an inborn and persistent *searching* drive, which often intensifies into curiosity and less frequently into a desperate urgency, as to the what, where, why or how of certain facts. This searching drive is the reason we are restless, dynamic, and often frustrated, self-starters.

Fantasies may serve, at first, as tentative explanations for the what, where, why or how. They amount to hypotheses, which must be tested. But when and if the fantasies are transformed into convictions, they become a part of the self—and a challenge to them is a direct challenge to us.

Some of the work of consciousness is accomplished in the *subconscious.* The processing involves classifying and mulling over the day's experiences. This sorting out, which

might be described as a struggle for consistency, also includes dreaming. This struggle for consistency became a part of both consciousness and the subconscious because it has survival value. It is a method of deciding what has and what does not have practical applications for everyday life.

The analysis of experience takes place in the interpretive cortex, which is located in the temporal lobes of the brain. Part of the sorting goes on in the back office (the subconscious) and some of the records never get to the front office (consciousness).

There is a less accessible mental reference file called "the unconscious," of which hypnotists and followers of Sigmund Freud have made some use. Some writers make no distinction between the subsconscious and the unconscious.

Consciousness came into play because it helped to keep our forebears alive. It helped to decide which berries to eat, and how many, and which to avoid. It helped us to choose which path to take, which companions to trust, who had the greatest strength and the widest knowledge. It helped us to predict how broad a gulley could be jumped and how small a branch would bear our weight. It told us how to avoid stepping on thorns and what to do if we stepped on one. Such knowledge determined which individuals survived and which perished. And the ultimate traits of a species depended on which individuals survived.

The earliest forerunners of consciousness, *tropisms,* which work somewhat like magnets, cause some single-cell animals to approach or avoid light and heat. Tropisms exist in plants too. The young trees lean toward the sun. The bean vines send tendrils exploring in the wet earth. The plant that devours insects has what must be a mutated tropism. It is an educated guess that a half-billion years ago in some single-cell animals mutations occurred which yielded intense tropistic reactions that were preserved and amplified because they favored survival. Time passed.

Some cells, as they divided, bunched together and some of these became specialized, developing into nerve cells and conducting electric current more readily than others. Reflexes protected the complex organism, as tropisms had protected the single cells.

In a later gradation certain stimulating situations required, for the survival of an organism, relatively complicated response patterns. The organism was stimulated by a feeling, and action followed. If the action was appropriate, the organism survived. The feeling was a desire for something different, and we call it an *instinct.* Any organism in a comparably hazardous circumstance without it did not survive. Consciousness and instinct seem to have been identical in their dim beginnings: an unease, a yearning, a need. At first there was probably a feeling of discomfort, resulting in movement to restore the status quo ante—in other words to terminate the pain and so the awareness of it.

But the experience was not lost. The scar from the discomfort may have been the beginning of the subconscious—a track to lead back to painlessness if discomfort came again from the same source.

One of the warning feelings that aroused primitive consciousness was coldness; another was hunger. The discomfort and its cure would have left an effect, chemical or electrical, on membranes, constituting a basis for response to subsequent similar experience. Results of experiences would accrue, like data fed into a computer.

Consciousness, having survival value, has influenced behavior from its beginning. And behavior never could or can be adequately explained without reference to consciousness. That doesn't mean that the work of behaviorists has been a total loss; merely that such work has been incomplete and that those behaviorists who denied the importance of consciousness or who gave it the silent treatment were woefully mistaken.

Very gradually, by means of many life-saving mutations,

consciousness broadened to include precepts, concepts, memory, decision-making and purpose. When it reached this stage, the precepts and concepts would be organized for the defense of the consciousness and the cells in which consciousness resided.

Success in the struggle for survival has depended on a self-centered orientation. A consciousness has to be somewhere. Where is it? It is in the brain cells of the organism it serves. It is where afferent nerves can register their messages and efferent nerves instruct muscles or glands to act. For routine matters there are lesser centers called "plexuses," which receive afferent signals—such as those having to do with the digestive process—and send instructions over efferent nerves. If anything goes wrong, the plexus does what a computer does—sends an "error" signal to the brain.

The young boy asks, in Wayne Miller's *The World is Young,* "What part of me is me?" The answer is the most authentic part of anyone is centered in his consciousness. Thinking of experiences is like thinking of the stars in a planetarium; there has to be a point of reference. In the planetarium it is earth, where the viewer is sitting. In the individual it is the self.

Yet the boundaries of self are amazingly elastic. We identify self not only with our mind and our ideas, our emotions and attitudes, but with our nose, our voice, our dog, even our rich uncle. *Our* family is the most important family. *Our* town is the nicest town. We feel closely bound to a professional football team in another state or with a quarterback who used to win football games for our college, though our hero is now with a team half way across the country. If someone criticizes his country, he suffers because something which is partly him is damaged. In a sense, a country is part of self. And, as we keep repeating, the center of self is consciousness.

Does a dog's consciousness operate from center stage? It could operate no other way. But a dog learns early that he must cooperate with humans and that where judgments or wishes clash with his master he must yield. His dominance is limited to other species than *Homo sapiens* and to some other dogs.

Systematized activity has to be keyed to consciousness, which is to say, to self. No other orientation is possible or perhaps even imaginable. We have sometimes heard a person say, "If I were he, I would do thus and so." What he really meant was, "If I, with my background of experience and ideas, were in his position, I would do thus and so."

Does inborn self-centeredness affect social behavior? How many love songs emphasize: "You, you, you, only you; and what I'll do for you!" The singer wins you over by emphasizing your self-importance.

A political candidate finds it helpful to remember names of voters. Remembering a name is recognition of the separateness, the identity, the individuality of its owner. How the politician may stand on the issues means less to many voters than his habit of remembering their names.

Various groups have been sure they are "God's Chosen People." That helps meet the instinctive center-stage demands and is especially comforting if the self has had some rough going. If consciousness is unsuccessful in maintaining status, there is compensation in the peripheral glories of being part of something successful.

Once upon a time there was Gulliver. The Lilliputians tied him up, without realizing what good things he could do for them.

Lothrop Stoddard was Gulliver and the Lilliputians were the small-minded, anti-hereditarian behaviorists of his time. His most important work *The Revolt Against Civilization* was published in 1922, and a few years later, as the book began to take effect, the Lilliputians massed for collective

action against it and the rest of his writings. They won, at least for half a century. The following from page 52 of Stoddard's book is one of his most important paragraphs:

> Every individual is inevitably the center of *his* world, and instinctively tends to regard his own existence and well-being as matters of supreme importance. This instinctive egoism is, of course, modified by experience, observation, and reflection, and may be so overlaid that it becomes scarcely recognizable even by the individual himself. Nevertheless it remains, and subtly colors every thought and attitude. . . . Each individual feels that he is really a person of importance. No matter how low may be his capacities, no matter how egregious his failures, no matter how unfavorable the judgment of his fellows; still his inborn instincts of self-preservation and self-love whisper that he should survive and prosper, that 'things are not right,' and that if the world were properly ordered he would be much better placed.

After the anti-hereditarians had discredited Stoddard, the self-centered nature of man seems to have been widely neglected. It was revived in a roundabout way in 1961 by Robert Ardrey in *African Genesis,* in the introduction to his chapter, "The Romantic Fallacy."

> The rule that whatever is appraised has to be judged on its relationship to self may involve standards already set up by the self. Time, energy and interest are limited, so most of the details are merely lumped together. The practice applies to the selection of clothing, books, movies, autos, friends, almost everything.
>
> When you put certain people in an unfavorable category, others who would classify them differently will accuse you of prejudice and discrimination. In many instances you are prejudging, reaching conclusions before you have considered the essential facts. Usually your critics are prejudging too. They have not dug for the truth any more than you. You will probably defend your classification without think-

ing through the particular circumstances. Your critics will similarly argue for their ideas rather than test them.

A superiority feeling is not a complex, but the primordial state of consciousness. While we may sometimes bolster our own egos by ridiculing what seems to be the pretensions of our neighbors, let's not lose sight of the fact that the feeling of superiority is an aspect of putting self in the center of things, an act required by consciousness for coordination. After one has been jolted a few times by experience, he is likely to reassess himself, and to see himself as others see him. Or he may lean over backward and develop an inferiority feeling. The latter can appropriately be referred to as a complex because it sums up a variety of experiences. But an egocentric position will remain the major basis of orientation, no matter how small a speck of dust man believes himself to be.

W. I. Thomas and Florian Znaniecki in *Polish Peasant in Europe and America,* a sociological classic published in the early 1920s, investigated "four desires" that emanate from a self-centered orientation.

The *desire for security* needs no elaboration.

The *desire for recognition* is a wish for attention, a gratification at seeing our name in the newspaper, a compulsion to "show off." One of the manifestations of this wish is the urge either to be in style or to rebel against style. Attention, of course, is more welcome if it is favorable, but for many people even mildly derogatory publicity is preferable to none.

Somewhat different, though springing from the same source, is the *desire to be effective,* "to get results." This, in its constructive phase, is what Thorstein Veblen has called the "instinct of workmanship." Most people would prefer their actions to be beneficial, but the craving is so strong that what the craver does may be actually harmful. The young boy lights a firecracker, the older boy engages in vandalism, the college student starts a riot, and Arthur

Bremer tries to kill George Wallace. Others may channel their desire to be effective into more constructive channels, such as putting a man on the moon, or working on a plan to bring water to Los Angeles from the Snake River.

Another result of the ego-pointing aspect of consciousness is the *desire for dominance.* Life is competitive and individuals work their way up or down to a rank or status which is determined by their performance. Usually status is an informal, not a rigid, classification.

"Peck Right" is a term indicating the order of ascendancy in certain species of animals or birds, the concept having been first crystalized by observation of the social hierarchy among hens. Robert Ardrey in *African Genesis* entitles his chapter on consciousness of rank, "Who Pecks Whom." "Every organized animal society," he says, "has its system of dominance."

Usually status is established among members of an animal or bird group by some sort of competition, such as a show of strength. But once dominance is established, the challenges to it are few. Among the baboons, the older ones retain their lofty status for years after they have lost the strength to defend it.

Status contributes to survival in some species by preventing interminable struggles for leadership. In species where dominant males have plural mates it improves genetic quality.

Stratification of human beings does not conform to the American tenet that "all men are created equal." But, as Vance Packard showed in *The Status Seekers,* stratification exists everywhere in our society. The lines were formerly drawn according to income, family background and leisure. More recently they have been drawn according to people's functions in the production of goods and services. Class lines become more, not less, visible as American business and industry become more bureaucratic.

Status depends less on family background, now that mobility is so great that families rarely remain together. Lei-

sure no longer serves as a status symbol, because the man who wields the most power often works longest.

According to Packard, we have developed a five-class system with a college diploma serving as a minimum requirement for the top two classes. The highest class is composed of top management and professional people.

Though most of us are vague about class divisions in this country, by the time we are forty, we have found our permanent niche in the class structure and have grown accustomed to it. Packard writes:

> Status distinctions would appear to be inevitable in a society as complicated as our own. The problem is not to try to wipe them out—which would be impossible—but to achieve a reasonably happy society within their framework.

To what, besides self (and immediate bodily needs), does consciousness give direct attention? For some the mere flow of life may monopolize their attention. For most people, however, a sense of purpose, which derives from their conclusions about the appropriateness of their activities, will keep some order in daily life. Purpose is likely to reinforce some habits, which in turn reinforce purpose. Since it gives persistence to motivation, it has, at least in the past, improved our chances of survival.

In a modern setting, in the short run, a sense of purpose has little to do with individual survival, since civilization takes care of the indigent. In the long run, however, a sense of purpose—or better a strength of purpose—determines the level of civilization. If individuals had no sense of purpose their behavior would be unpredictable, and social organization would be impossible. Proceeding from hunting and agricultural stages to village and city living, individuals have coordinated their behavior and the resulting social patterns have become a framework in which the sense of purpose of newer group members takes shape. The inherited tendency of individuals to formulate and persist in

their various purposes is necessary to successful city organization. If birthrates, emigration or immigration are such as to result in a large proportion of the inhabitants of a city being of low intelligence or lacking purpose, urban conditions deteriorate.

As to the hereditary tendency of men to be purposeful, it seems to belong to that aspect of intelligence which has to do with the power of anticipation. Purposefulness, moreover, involves considering the influence of present actions on future results. As Leonard Hobhouse said in *Mind in Evolution,* purpose "involves an idea of an end." A sense of purpose has aided survival in many ways, primarily perhaps by stimulating the preparation for winter in prehistoric times and in laying in supplies for lean years.

Armed with the perspective of a strong purpose, decisions are relatively easy. Random impulses, which may be competing or conflicting, are subordinated or excluded. Anything that does not contribute to the main effort is ruled out. To a person with a central purpose, boredom is rare. Life is intense, fascinating and consistent. And in working for an ideal, the individual can be confident and comfortable that he is standing in the center of things.

Later when we investigate the requirements for building civilizations, we shall see the parts that egocentricity and consciousness play in the formation of social structure. In chapters immediately following, however, we will continue to examine our mental equipment for the reason that the state of a civilization depends largely on what is in the individual's mind.

In recent times, in part because of the influence of John Dewey and Benjamin Spock, unlimited human egotism has come to be considered the whole story, as if all the world must yield to the tantrum throwers. No longer are serious endeavors made to mold the individual to fit society. Important decisions must be made "at once." Everything must have an immediate interest.

Any drive is, and has to be, restrained in some measure, either by other drives and values, or by other people. In spite of the space we have lavished on ego in this chapter, we shall find that it does not constitute "the whole person" on which civilizations are built.

Chapter 2

The Legacy of Instinct

A fire-mist and a planet,
A crystal and a cell,
A jellyfish and a saurian,
And caves where the cavemen dwell;
Then a sense of law and beauty,
And a face turned from the clod,—
Some call it Evolution,
And others call it God.

William Herbert Carruth

Anyone who tries to understand the rise or fall of civilizations without attention to biological evolution is plunging into a labyrinth without "a clue or a sword."

The structure of our minds is just as much a product of evolution as our bones, glands and muscles. Mind and body evolved together, and they work together. Mental patterns are geared to body form and functions. We are born with a network of mental inclinations which accompanied, guided and protected us in our multimillion-year journey "up from the ape." Man's mechanisms for concepts and emotions, as well as the efficiency of his reasoning, are as surely the results of evolution as are his body traits.

The hand, for instance, was functional way back when our habitat was mainly in trees. Contemporaneously, babies probably developed a reflex which caused them to

grasp what touched their hands—the fur on their mothers' back or the branch that would keep them from falling. So when we came down out of the trees, more than twenty million years ago, the hand *and the mind* were ready to pick things off the ground instead of merely working together for the purpose of hanging on to mothers and trees. Now the hand-mind partnership was ready to grab stones and clubs. But our reflexes have also received help from more complex sources. "What shall I do with my hands?" asks the young man going to a party. Since his hands were originally used for grasping, they adjust readily to a girl's waist, as they have previously adjusted to a baseball bat, to a fishpole, an ax, a hoe—to almost anything but emptiness. To be empty-handed is what makes our young man uncomfortable.

There is another mental pattern which must have become fixed in heredity at the time the grasping reflex was developing. That is the fear of falling. Whether we label this a drive, urge, wish, instinct or appetite is not important —so long as we recognize acrophobia as inherited and derived from mutations in the hundreds of millions of years of our evolutionary span.

Here we might say that mutations are changes in genetic patterns. We have learned much about them from studies made by H. J. Muller (1890–1967) of evening primroses, fruit flies and human beings. Radiation is one cause of genetic changes. There may be others. Muller brought about heritable changes in fruit flies by the use of X-rays.

The eventual effects of mutations are unpredictable, but they are more often harmful than helpful, just as random deviations in any system are more likely to be inharmonious than harmonious. Through the eons of biological evolution the harmful mutations, which led to inefficient or otherwise inappropriate behavior, made their possessors more prone to extinction. Even though the adverse mutations might outnumber the beneficial ones 100 to 1, the

ultimate result would be greater adaptability to the environment, since the harmful changes would be eliminated while the beneficial changes would be cumulative.

Many people have rejected evolution because they have not read enough about it to understand it. Having heard that harmful mutations outnumber helpful mutations, they find it hard to believe that human beings could have developed by evolution from less efficient creatures. The essential which they have overlooked is that in a fiercely competitive evolutionary situation handicapped competitors cannot survive. If the competition is between individuals, the handicapped individuals are eliminated. If group cooperation protects those individuals for a few generations, the group itself falls victim to the harsh competition.

The upshot is that when and where evolution prevails, "only the fit survive." Even though many more harmful than beneficial mutations appear in a species over a period of time, in the long run the species will represent and be represented by the beneficial mutations, or else the species itself will disappear—along with the dodo birds.

The study of instincts properly began in 1859, after Darwin had discovered that species of animals evolved from earlier species and that human beings followed the same law.

But in the 1920s a few psychologists gained prominence by claiming that human behavior is fully explained by conditioning. Their theory was known as Behaviorism. They demonstrated that people could be conditioned to do things they never would have done otherwise, and they claimed that nothing "comes naturally."

Of course everybody agrees that *some* conditioning enters into almost all human behavior, but these psychological dramatists made it seem to many that heredity plays no significant part at all in man's makeup. People with axes to grind have kept this mythology alive to the present day.

Many sociologists followed the lead of the behaviorist

psychologists, and it was not long before the disparagement of instincts became an academic vogue. One sociologist who bore a great deal of responsibility for the trend was Dr. L. L. Bernard, then of the University of Chicago. He published widely on instincts and authored the article on the subject in the 1932 *Encyclopaedia of the Social Sciences.*

Bernard concluded that instincts play practically no part in "the cultural elements in human behavior," a conclusion he reached *by definition.* He defined instinct as "a specific and definite inherited or unlearned response which follows or accompanies a specific and definite sensory stimulus or organic condition that serves as a release to the inherited mechanism."

Examine Bernard's wording. According to him an instinct is an inherited *response*—not a specific and definite sensory or organic condition. It appears that, in Bernard's thinking, the efferent aspects of experience constitute the totality of instinct. The afferent part, "the sensory stimulus or organic condition," is not, in Bernard's view, a part of instinct itself. Consistent with his emasculated definition of instinct, Bernard could then claim that instinct had little or no part in inducing human behavior. Thus, shutting his mind on what is dynamic in heredity, he became a crusading behaviorist.

Bernard dismissed other writers who had used "organic conditions" as inherited bases of cultural behavior with one sweeping sentence: "The pro-instinctivists began to rearrange their broken legions in the form of redefinition and of substitute categories, such as drives, desires, wishes, harmonic urges and prepotent reflexes . . ."

What the "pro-instinctivists" had really done was to recognize that in human beings the follow-through part of instincts had been mostly replaced by intelligence. At the same time they asserted that we still inherit, in full force, the motivational part, the drives themselves. Bernard chose to sweep their work under the rug.

The gap between reality and the theory of the anti-

hereditarian behaviorists seems to be related to their avoidance of the concept of consciousness. Having not developed any concepts to explain the reality of consciousness, they decided to ignore it.

We can't exclude consciousness and its elder brother, the subconscious. That's where the urges are, and the fears, and all the other emotions. To omit consciousness and the subconscious in the explanation of behavior is not to mention the engine when explaining the operation of an automobile. Actually, consciousness serves as a guide and monitor of our actions.

There are specific inherited fears other than the fear of falling. Some people have claustrophobia, a fear of closed-in places. And some scholars are convinced that we have an inborn fear of snakes. If so, we acquired it in our tree-climbing stage. Snakes constitute a great danger to monkeys, but monkeys don't have to be told of the danger. They have a built-in warning mechanism with neural connections always at the ready.

Less specific fears are also instinctive, from vague uneasiness to sheer terror, each triggered by a wide variety of circumstances which spell danger. From the dawn of time, fear has saved innumerable lives—and it still does.

Does the terror of a nightmare have any survival value? Maybe so. This is not to say that the content of a dream has any similarity with the events that initiate it. For instance, you may return late to your college dorm and enter your room quietly and stealthily, so as not to disturb your sleeping roommate. The sleeper's extrasensory perception cues him only to the fact that something or someone is there. In his dream, lions may be about to pounce upon him. If you had walked in normally, there would have been no alarm in your roommate's dream and probably no dream at all. It was fear of the unknown that triggered the minor nightmare.

Intelligence arose as a supplement to instincts and Leonard Hobhouse elucidates this genesis in his book *Mind in*

Evolution (pp. 90–106). He tells of the efforts of two wasps to put two dead spiders in storage. One looked at her storage hole, then at the spider, then went back to the hole and made it larger before attempting to put the spider in it. After moving the spider in, she tried to cover the hole with different objects—a stone, a lump of earth, a leaf and finally a dryer leaf, which was easier to drag. Altogether she worked an hour on the project. The other wasp crammed her spider into her storage hole, wedged a few pellets on top of it, pushed dust over them, smoothed the surface and finished the slipshod job in five minutes.

Hobhouse provisionally calls this problem-solving ability of wasps "the play of intelligence within instinct." He writes:

> The more an instinct becomes suffused with intelligence the greater the proportion of the whole course which may be grasped as a conscious purpose. In "pure" instinct, each stage by passing brings on the next, and the instinct must run through its course by a prescribed series of stages or not at all. It cannot, outside narrow limits, adopt alternatives. Intelligence, on the other hand, grasping the ultimate aim, is indifferent as to the method by which it is reached. Thus as intelligence rises, the fixed processes of instinct dissolve. But intelligence does not spring into being fully armed from the head of Zeus. It is born within the sphere of instinct, and at first grasps only a little bit of what instinct prompts. It apprehends, say, the next stage, and, ordinary means failing, guides some special effort to reach that stage, the next stage, not the ultimate end, being the purpose understood and realized by the animal. It is easy to see how from this point it may develop, taking remoter stages or ends into account, until it grasps the final purpose and meaning of conduct. Clearly also, as this development proceeds, the need for detailed determination of response by heredity disappears.

The scope of reason is very narrow at first, allowing only one or two alternatives in the event of a mental impasse. Hobhouse explains:

> Intelligence . . . arises within the sphere of instinct; indeed we can draw no sharp and certain line between them in nature. . . . At first narrowly limited in scope, intelligence deals with proximate ends. As it expands, it comes to embrace the remoter and at length the ultimate end to which action is directed. Along with this advance the power of choosing the means best suited to the purpose expands, and the determination of successive stages of action by hereditary structure simultaneously disappears.

And how does Hobhouse define instinct?

> Instinct is an enduring interest determined by heredity and directing action to results of importance to the organism without clear prevision of those results.

The first part of that definition has particular relevance for humans. Instinct is "an enduring interest determined by heredity." In men, however, instincts have little to do with programming the details of procedure. Habit, custom, conditioning and intelligence take over.

But what a vast importance there is in those "enduring interests," otherwise defined as moods, emotions and dispositions. In triggering motivations, a large proportion of the initiative is still instinctive. Consciousness and the subconscious mind are still largely organized on the basis of inherited impulses and longings. Says Hobhouse:

> Heredity lays the foundation of our entire mental life. We inherit not only capacities for sensation and emotion, but also capacities for distinguishing, analyzing and combining them . . . . We have contrasted intelligence with instinct, referring to intelligence as the work of the individual, and to instinct as the product of heredity. . . . but intelligence as a capacity is also hereditary.

My own definition for intelligence is brief. Intelligence is the ability to solve problems. It is based on the heredity of brain cells, but its development is markedly influenced

by environment. What Intelligence Quotient (IQ) shows is a combination of the two. If your IQ score is very far above the general average, which is expressed as 100, you have a favorable helping of both nature and nurture.

In *The Mind,* one of the interesting books published by the Life Science Library, Dr. Catherine Morris Cox has estimated the IQ scores of some of the prominent men of the past. Here are the top dozen:

Goethe	210	Kant	175
Newton	190	Luther	170
Voltaire	190	Johnson	165
Galileo	185	Mozart	165
Da Vinci	180	Franklin	160
Descartes	180	Rembrandt	155

I should like to nominate about fifty others for that list. Probably you would too. And I should guess that some of those whom Dr. Cox studied would have had higher or lower scores than those she arrived at.

Part of the talent for problem solving is "creativity." Some psychologists think that the IQ tests currently in use do not measure the creativity function very well, if at all, and they are working on more specialized tests. However, I believe that creativity is useful only if it is combined with a higher than average IQ. Otherwise the creative person is likely to lack the balance to see the long-range results of his creativity, which may be more destructive than constructive. So I think there is a social risk in giving special responsibilities and worldwide recognition to individuals whose intelligence is so narrowly concentrated that it leaves its possessor with an unimpressive IQ score.

A great many emotions belong to our psychological repertory because at various stages of our evolution they have saved lives. Fear, dread, abhorrence, revulsion, disgust, anger, rage, hate, envy, greed, frustration, impatience,

grief, guilt, remorse, surprise, curiosity, joy, superiority, inferiority, love, respect, adoration, loyalty, happiness, yearning, hunger, sorrow, loneliness, drowsiness, appreciation, satisfaction, feelings of urgency, security, smugness, freedom, gratitude—each must have had a life-saving function. The list is not intended to be either exhaustive or precise, merely a reminder that life is very largely motivated by inherited emotions—and the actions authorized by inherited brain cells. Intelligence replaced the end stages of instinctual behavior, for the simple reason that flexible responses had a greater survival value than rigid responses.

There are also a formidable number of antagonistic feelings which have slipped into our survival mechanism because they stimulated our ancestors to escape or avoid dangers of various sorts. The friendly feelings are more fully explained in the next chapter and the unfriendly feelings in a later chapter. Both have their roles in civilization.

Chapter 3

The Social Appetite

To understand and to be understood make our happiness.
German Proverb

The need for companionship demonstrates the inheritance of the social appetite. This readiness for association is regularly present in the subconscious and frequently inches its way into consciousness. One name for it is gregariousness. The same root is found in the word congregate—to collect into a flock, herd, mass, crowd.

Some scholars have treated gregariousness as if it is only *one* instinct. Such reductionism is inappropriate. The vast sweep of the milky way is not "a star." The gregarious area of feeling constitutes an agglomeration of motivations to the extent of involving a whole "mind-set." Very largely, our feelings as well as our behavior patterns have developed in harmony with group living—starting many millions of years before our ancestors were human beings. Neural connections and chemical flows stand by in each of us, ready to give meaning to cooperation and group participation. Our feelings range from a mild appetite for association to a fierce hunger for it.

Darwin, in his *Descent of Man* (Chapter IV), considered the major characteristic of "the social instincts," as he called them, to be sympathy. Probably just as important,

within the galaxy of socially inspired emotions, are desires for recognition, for companionship and for social approval. We are lonely and unhappy when we are by ourselves too long. We look forward to getting back to the pack.

One outgrowth of the social appetite is friendship. *Time* magazine (June 8, 1970) reported that there are 311 aphorisms on friendship in Bartlett's *Familiar Quotations.* In Benham's *Book of Quotations, freedom* and *liberty* together constituted only 81 entries while *friendship* had 362. The only subjects which produced more quotations than *friendship* were *women, love* and *death.* I suspect that these statistics demonstrate basic, inherited feelings. Of the four, only *death* reflects an ego feeling. Not only *friendship,* but *love* and *women* represent, at least in part, social attitudes.

A characteristic closely linked to the mind and evidence of the inherited nature of the social appetite is the tendency to blush. A blush, says the dictionary, is "excited by confusion, which may spring from shame, guilt, modesty, diffidence or surprise." In general we blush as a reaction to what we think others are thinking. I suppose, since the specific physical response is inherited, the term "blushing instinct" would not be inappropriate.

We must examine the *social* demands for attention, recognition, acceptance, companionship and approval, and weigh them against the *ego* demands for air, water, food, warmth, sex and sleep.

Both the ego and social demands exert a pull on consciousness. In the process of their fulfillment the ego demands arouse feelings of satisfaction. The activity stimulated by the social appetite, in contrast, is gratifying only because it improves or should improve the prospect of obtaining outside approval. Usually "duty" or "what people expect" or "what is good for" the college, the village or the nation triggers the action, though the action itself may be unpleasant.

I have classified sex as one of the ego feelings, though it is often considered as a social emotion. It is best described as a "bridge" that gets its force from both areas of the mind, notwithstanding that in the case of rape, egoism seems to be the sole factor.

Touch may tell us something about the social appetite. Sensitiveness to human touch seems to have a gregarious base. If we already have a degree of intimacy with another human, a light touch usually heightens it. The handshake is an illustration, but a hand on the arm or a pat on the back can be even more magnetic.

A curious phenomenon, associated with the self-centered nature of touch, yet dependent also on the inherited social urge, is that, although another person can tickle you, you cannot tickle yourself.

Another aspect of inherited social appetite is demonstrated by the desire for approval. Your mind is only partly yours. Your unconscious reaching for other minds shows that part of your mind belongs to the group. You were born that way. You always have a subservient streak because without subservience you would be very, very lonely.

Although there is not necessarily any survival value in *particular* acts sparked by a gregarious emotion, survival is greatly enhanced by *group* unity. One twig is weak. A bundle of twigs is surprisingly strong. Neural and mental mutations which lead to correlated action have so increased chances of survival that they appeared in parallel evolution among many kinds of bugs, beasts and birds, even fishes.

Ants, bees, ducks, sheep and various other gregarious species have become so socially dependent they are badly disorganized if denied the opportunity to function cooperatively. An ant is almost as united with his colony as if he were a cell in a single organism, and his mind doubtlessly reflects this selflessness. The bee is a little less dependent. A sheep can be happy only when doing what other sheep are doing. Most mammals, and all primates including man,

are geared to a life common to their kind. The proportion of life that is socially oriented varies with the species—and to a much smaller extent with the individual.

Suggestibility also demonstrates the inheritance of the social appetite. The home of gregarious traits is the subconscious level of the mind. As I walk along a campus path, a young lady is approaching, whom I know, but cannot name at the moment. I struggle to recall her name, but my mental files are too cluttered. So I give the job to my subconscious. Five minutes later, when I am no longer thinking of her, her name "pops into my head."

Names and facts can be usefully recalled out of the subconscious level; even organizational and mathematical problems can be solved subconsciously. These functions of the subconscious are important, but since we are emphasizing gregariousness, our focus here is on suggestibility.

There were many early pioneers in psychology and sociology who studied the social drives of man. Among them were Karl Pearson, Lester F. Ward, Gustave Le Bon and Boris Sidis. Pearson was perhaps the first to crystalize the social appetite concept—in three studies: *The Grammar of Science, National Life from the Standpoint of Science* and *The Chances of Death.*

Ward, in *Pure Sociology,* discussed what he called an "instinct of race safety" out of which "all the more important human institutions" had developed.

The Frenchman Le Bon examined mob psychology in *The Psychology Of Crowds.* He treated suggestibility as a form of mob psychology. Emotion stirs easily at football games. We sit on the edge of our seats, sing, yell ourselves hoarse and feel we have gained a personal victory when our team makes a first down. It is almost the same at a political convention. We purr with pleasure in front of our TV set when "our" candidate puts down "their" candidate. In the mind of the mob the world is made up of us good guys and them bad guys.

In panics, riots and revivals suggestibility is at its height. It is also present, though less dramatically, at PTA meetings and birthday parties.

Advertising depends on suggestibility. Le Bon's idea of the power of repetition has become a money maker for Madison Avenue. Slogans loaded with suggestion produce sales. "Grapenuts; there's a reason!" We are seldom told what the reason is, but we buy them anyway.

In the 1950s we learned about subliminal suggestion. Without our knowledge some of us were apparently being turned into psychological guinea pigs. Movie theaters flashed ads about the candy and popcorn at their concession stands—so briefly that nobody really knew what was going on. Yet sales increased some fifteen percent. When the report came out, people marveled, but felt uneasy. Maybe there ought to be a law against it.

Dr. Benjamin Libet, a physiologist at the University of California Medical Center in San Francisco, whose experiments were reported in *Science News* (Dec 30, 1967), theorized that brain activity must persist at least half a second in order to register on our consciousness. Electrical impulses of less duration directed into the sensory cortex had no effect on consciousness, yet yielded localized motor responses. Dr. Libet reasoned that unconscious experiences even of some complexity may be retained and accumulated as reflex memories to initiate, supplement or reinforce ideas.

Politicians are faithful partisans of suggestibility, using sloganized concepts to prove they belong to the herd. They glorify heaven, home, and mother and they yield to no man in their opposition to sin. Lately, too, they have become "compassionate" and are surer than ever that "all men are created equal."

Like Le Bon, Boris Sidis, author of *The Psychology of Suggestion,* put his emphasis on panics, revivals and similar occurrences. Man is social, said Sidis, "because he is suggestible."

Suggestibility goes far in explaining fads, fashions and the contagious nature of fear, happiness and other emotions and moods. Mimicry, a common trait of children, and consequently a common method of teaching, obviously leans heavily on suggestibility. The power of suggestion often influences both feeling and action, and sometimes, as in hypnotism, it produces the action without the feeling. Like the social appetite itself, suggestibility reveals a hereditary cast of mind.

The advantage of suggestibility in evolution is its ability to induce homogeneous responses. For hunted animals it may trigger the collective reaction of flight. For hunting animals it may improve the chances of the kill. As Kipling expressed it, "The strength of the wolf is the pack and the strength of the pack is the wolf."

In the early stages of suggestibility (which may have been two or three hundred million years ago), the reasoning faculty was still in its incipient stages. Consequently mutations favorable to suggestibility and leading to unified group behavior would have survival value and become hereditary. Man didn't need to reason that cooperation was helpful, if collective responses made him feel less lonely or more secure or more comfortable.

"[I]t is evident," says Wilfred Trotter in *Instincts of the Herd in Peace and War,* "that the members of the herd must possess sensitiveness to the behavior of their fellows. . . . not only will the individual be responsive to impulses coming from the herd, but he will treat the herd as his normal environment."

Herd suggestions impinge on the individual because what the herd does, if it does not stray too far from standardized behavior, is ordinarily taken to be right. And if something "isn't being done," then the individual will normally avoid doing it—with no thought as to the reason why.

An impulse triggered by group suggestion is strengthened, as it occurs, by the value of rectitude. No argument or evidence is necessary, because an act or opinion which

keeps the individual in line with the herd has an air of finality, though it may differ from what was "right" on a previous occasion. It is, of course, not the act or the opinion that is inherited. It is the wish, the drive, the longing for group sanction.

Hypnotism offers further proof that the social appetite is inherited. Its discoverer was Dr. Franz Anton Mesmer, which is why it is also called mesmerism. Mesmer was an Austrian who began to practice medicine in Vienna in 1765. He was a highly respected and influential citizen until he discovered hypnotism in 1777. Soon after, the Vienna Medical Society forbade him to practice. From Vienna he went to Paris, where he again was quite successful until the French Academy of Medicine forced him into retirement.

Mesmer had no idea of the extent of the gold mine he had stumbled on. He didn't know he was prospecting in the depths of the subconscious, that area of the mind which is a link between the individual and the group. What he did know was that he was alleviating the suffering caused by nervous disorders.

Mesmer had the idea that the stars exerted a magnetic influence on people. He wondered if an ordinary iron magnet would do the same. When he passed a magnet over a patient, the patient often became more obedient. Then he learned that making the passes with his hands alone had the same effect. His followers later found that merely to suggest sleep would often suspend a patient's consciousness and that orders given during a trance would be carried out after the trance.

In the 1840s James Braid, a disciple of Mesmer, called trances "hypnotism." French physicians correctly came to the conclusion that hypnosis was a consequence of hypersuggestibility.

In the early 1800s it was found that hypnotism could prevent pain. British surgeons John Elliotson and James Esdaile performed major operations in which the patients

were put to sleep by hypnotism. That was before the practice of anesthesia was heard of.

Elliotson, born in 1791, got his medical degree in 1821. In 1831 he was appointed Professor at the University of London. He became an enthusiastic student of mesmerism, which he featured in his classes and later used in a hospital which he established in 1840. He also started a magazine devoted to mesmerism.

Esdaile was born in 1808, obtaining his M.D. in 1830. The next year he went to Calcutta for the East India Company. In 1838 he was put in charge of a hospital at Hooghly. Having heard of Elliotson's works, he mesmerized a Hindu convict who needed a painful operation. He brought about "a complete suspension of sensibility" in the patient for the operation and for a follow-up operation a week later. After a careful investigation, the government put a small hospital at his disposal, where native assistants mesmerized patients under his supervision. In all, Esdaile performed 261 painless operations himself and supervised many others. After chloroform and ether came into use about 1850, hypnotism has been used only rarely as an anesthetic.

Why was hypnotism so effective? When the ego phase of mind is dormant the social phase has a monopoly—the run of the house.

Altruism, another facet of the gregarious urge, involves doing something for the benefit of others. It is on the same order as unselfishness. When a child shares his precious candy with a schoolmate, the act is altruistic. Altruism can, on occasion, demand the most serious sacrifices. Though there may be no direct survival value for the doer in the extreme form of altruism, the willingness to risk death for the benefit of others increases the chances of survival of children, wives and fellow citizens. The hero, whether he survives or not, is always the object of adulation. In any case, whenever someone risks his life for another, the ego drive clashes with the social inclination, with the result that

the herd feeling supersedes the will to survive and the wish to avoid pain.

Robert Ardrey relays a report from Eugene Marais of an event in a troop of 300 baboons which the latter had been studying for three years. At dusk a leopard was taking his time choosing his dinner from the cornered and terrified troop. Although a baboon has no chance at all in a fight with a leopard, two male baboons crept to a small ledge about twelve feet above the predator, and suddenly dropped on him. One tried for the throat; the other for the spine. A slash from the leopard's hind claws ripped open the body of the baboon holding on to his throat and his teeth tore loose the other one. Both baboons were killed in seconds. But the one at the leopard's throat had reached the jugular vein, and the predator died with his victims.

Tennyson tells of some altruistic British soldiers in "The Charge of the Light Brigade," and an awesome feature of World War II was the performance of the kamikaze of the Japanese Air Force. The suicide tactics of the latter was the most dramatic example in modern times of group love triumphing over self-love.

The Wall Street Journal (Oct. 13, 1972) reported that in the last sixty-eight years the Carnegie Hero Fund Commission had awarded medals and cash payments totaling $12 million to 5,939 heroes or their families. Six investigators searched every reported case of heroism in great detail. The social appetite was noticeable in the reaction of witnesses to acts of heroism. The Commission said they often expressed a sense of guilt for not having acted themselves.

Since altruism is one of a whole array of inherited drives it may be submerged, in some circumstances, by other feelings. At Princeton University, Dr. John M. Darley and Dr. C. Daniel Batson set up an experiment in which forty theological students were asked to prepare a short talk. Every fifteen minutes one student was told to go to another building to have his speech recorded. On the way he passed a man lying in an alley, an actor who was groaning and moan-

ing and pretending to be in great pain. Would the student stop to help?

The students were divided into three groups. Each student in the first group was told to take his time getting to the recording session. Members of the second group were instructed to hurry. Those in the third group were told they were late and had to rush.

Altruism came into play in proportion to the time each student was given to meet his schedule. In the first group sixty-three percent stopped to help; in the second group forty-five percent; in the third ten percent.

Conscience, another of the many components of gregariousness, is "the still small voice," the herd's monitor of the individual's mind. It forces the individual to heed the standards and objectives of the group and makes him feel guilty if he deviates. Conscience, if you look it up in the dictionary, "generally refers to the feeling of satisfaction or approval that follows action regarded as right and the feeling of dissatisfaction or remorse resulting from wrong conduct."

You think of your conscience as a second self, a more honorable self than the ego. The truth is it is your social self. The ego, by comparison, is more erratic, whimsical, spontaneous, noisy, demanding and unpredictable. It claims more attention, but seems to work without system or plan.

The contents of conscience are not inherited, and the behavior requirements for "a clear conscience" are not innately programmed. What heredity does supply is a desire to keep in good standing with the group. If the group standards are fixed, compliance is an objective of the social self. Since the basis of morality is the group code, the on-duty policeman is the conscience.

Here it might be added that actions proposed or prompted by the ego are often interpreted as evil and sinful, in other words, "unconscionable." These value judg-

ments are easily applied to members of an outgroup. Actions supposed to be beneficial to an ingroup are interpreted as good.

Good and evil, right and wrong, depend largely on group standards. Sometimes, since the altruistic drive is partly directed by reason, what is good or bad depends on the decisions of individuals. Group standards were developed during two hundred million years in which death sentences were handed out by the herd or the environment to those transgressors who treated the code too lightly. Deviation from the group pattern resulted in loss of group protection, which was frequently tantamount to loss of life. Consequently, after all this time none of us is born without great sensitivity to the collective discernment of society.

Religion is rooted in and receives its nourishment from our social inclinations. The fact that religiosity, as a psychological trait, is universal is the best evidence that it is part and parcel of our biological heritage.

Man as an individual is and feels incomplete. He seems to sense the fact that he never could have become man by himself, only in cooperation with his tribesmen. The tribe has been his helper, his partner, his protector and his companion. His most intense desires, vague as they are, have been for the attention, the approval, the companionship and the sympathy of the tribe.

These deep-seated feelings, firmly engraved on everyman's genetic code, were there for millions of tribal years, pre-human as well as human. Any deviant who did not long for the company of his fellowmen was in danger. A harsh environment would quickly put an end to him and he would leave no offspring to pass on his aberration to subsequent generations. Only those imprinted with the social appetite survived. And thus it became an integral component of the human condition.

Religion was originally the feeling of gratification of the individual for the benefits received and to be received from

the tribe. And it is both a major implementation of the social drives and the dynamic drive of the ego-tribal duality. It serves along with the other social feelings as a balancing factor for the aggrandizing drives, which arise from the self.

Life was tribal during millions of years of hominid evolution, during which religion was interwoven with every aspect of life. The medicine man was the high priest, presiding over ceremonies and rituals which the tribesmen felt were important, though they could not have explained why. Modern researchers usually think of religion as a structure of superstitions. They cannot seem to get it into their heads that its primary function was to keep the tribe unified.

In later times tribes recognized links with other tribes and expanded into social units known as civilizations. Then, as knowledge became specialized and more complex, it divorced itself from religion. Philosophy separated from theology, economics from philosophy, sociology from economics. Special interest groups of a thousand varieties were formed. An individual might be attracted by, and his loyalty fixed on, a gang, club, fraternity or association, pressure group, corporation, baseball team, scientific society, revolutionary "movement," political party, province or region. Today most people feel a common bond with at least two or three such social units.

Religion is about all that has come down to us from tribal life, from the long forgotten days when the loyalty of members was undivided. The old tribal functions are now the legacy of our local church. Such functions include marriages and funerals and most important of all—fellowship.

We must pursue the relation of religion to the social order a little further. We all vaguely understand the statement that "the kingdom of God is within you." This is almost the same as saying that a very important part of us is not on center stage.

The self is often considered by religious teachers as a foil. They prefer to appeal to the social side of the mind;

to the desire for companionship, attention, acceptance, recognition and approval; to our need to tell somebody what is bottled up inside of us; to the desire to be "in" and to "belong." They also play on our conscience and our altruism by alternately appealing to our "better instincts," praising the virtues of repentance and chiding and reprimanding us for our sins.

Altruism and conscience are essential building blocks of religion. Doing things for others is given tremendous importance in most denominations. A person noted for his altruism is thought of as "good," even if he belongs to a different denomination. The famous poem of Leigh Hunt expresses a widely held attitude:

> Abou Ben Adhem (may his tribe increase!)
> Awoke one night from a deep dream of peace,
> And saw, within the moonlight in his room,
> Making it rich, and like a lily in bloom,
> An Angel writing in a book of gold:
> Exceeding peace had made Ben Adhem bold,
> And to the Presence in the room he said,
> "What writest thou?" The Vision raised its head,
> And with a look made of all sweet accord
> Answered, "The names of those who love the Lord."
> "And is mine one?" said Abou. "Nay, not so,"
> Replied the Angel. Abou spoke more low,
> But cheerily still; and said, "I pray thee, then,
> Write me as one that loves his fellow men."
>
> The Angel wrote, and vanished. The next night
> It came again with a great wakening light,
> And showed the names whom love of God had blessed,
> And lo! Ben Adhem's name led all the rest!

Ethel Percy Andrus, founder of the National Retired Teachers' Association, has said, "The loftiest aim of human life is unselfish service to others." Much of the wisdom of the past conveys that thought. "Let the wise man show forth his wisdom, not in words but in good works." "By

charity were all the elect of God made perfect: Without it nothing is pleasing and acceptable in the sight of God." Ella Wheeler Wilcox put it this way:

> So many gods, so many creeds,
> So many paths, that wind and wind,
> While just the art of being kind
> Is all the sad world needs.

Sir Richard Steele, who died in 1729, asserted, "The noblest motive is the public good." William Wordsworth wrote in 1798:

> That best portion of a good man's life,
> His little, nameless, unremembered acts
> Of kindness and of love.

Oliver Goldsmith complimented a pastor in these verses:

> Thus to relieve the wretched was his pride,
> And e'en his failings leaned to Virtue's side.
>
> His ready smile a parent's warmth expressed,
> Their welfare pleased him and their cares distressed.
> As some tall cliff, that lifts, its awful form,
> Swells from the vale, and midway leaves the storm,
> Though round its breast the rolling clouds are spread,
> Eternal sunshine settles on its head.

Cicero remarked, "The diligent husbandman plants trees, of which he himself will never see the fruit." Robert Bloomfield, born in 1776, said:

> Thine heart should feel what thou may'st hourly see
> That Duty's basis is humanity.

Horace Mann had this advice: "Be ashamed to die until you have won some victory for mankind."

Were Hunt, Andrus, Wilcox, Steele, Wordsworth, Gold-

smith, Cicero, Bloomfield and Mann speaking religiously or clarifying that aspect of the inherited social impulse which is altruism? The answer is both. Altruistic thoughts and deeds are offshoots of religion, and religion, as we have seen, does not come from on high but from the genes.

Of course there is a certain "religious" puzzlement and awe at the power of electricity and gravity, at the spinning of the planets and the blinding lightning, and even the cold-blooded process of evolution. But these are not deemed to be the work of the personal and personified God, the God of love from whom all blessings flow.

It may be hard for us to admit, but the indiscriminate exercise of kindness can encourage loafing or wrongdoing. We all have duties, not only to individuals, but to the social structure that serves us, and in case of conflict the social structure must be given priority. Unconditional charity to people who are a burden to society is the insidious destruction of society. There should only be charity when it does not increase the need for charity.

If we look at society as a whole, we will see that it is based largely on expectations. Perhaps this is not the right word, because the word "expectations" implies conscious anticipation, whereas the basic feelings which comprise the social appetite are in the subconscious and rarely rise to consciousness except when something goes wrong. The trouble is, there isn't any word which exactly represents the psychological component of society, probably because the subconscious aspects of mind have not been studied enough to develop an appropriate vocabulary.

Nevertheless, social structure is essentially a subconscious constituent in the mind which, when it comes to consciousness, gives the impression of an expectation. A student habitually comes to school at two minutes before eight. Did he "expect" his teacher to be there already? If you asked, he would have said yes. In reality, however, the teacher had not been on his mind until you asked, or until he discovered that she was not there!

We know that the airline clerk will be where he is supposed to be when we go to buy a ticket; that an officer will be at the police station when we phone; that the fire department will come to our burning house when we call; that the newspaper will be on our front lawn by six o'clock; that, if we send a check to the insurance agent, our bank will see to it that the appropriate sum is transferred from our account to the insurance company's account. We know these things. But they are not in our consciousness. We simply take them for granted. If something should go wrong, however, we raise a racket. "We never miss the water till the well runs dry."

Factories, farms, theaters, TV networks—and their personnel—are all part of the social structure. On them we have developed a strong psychological dependence which we can define as "expectations," even though they are only in our subconscious.

Social structure, which wasn't built in a day, functions because people willingly fit in and cooperate. It rests on the habits and expectations which mold an individual to the system and the results of conditioning. But the basic elements of the habits—and the basic foundations of the whole social structure—are the primary motivations, which are inherited.

Though social structure of some sort has been present in all group living, a complex social system is necessary for civilization, which depends on intelligence, another gift of heredity. Inventions require intelligence; so do the division of labor, the exchange of products and services, and the variety of other procedures and processes typical of complex social organizations.

The social appetite leads to order. Among our prehuman ancestors sympathy and the desire for social approval made mutual aid and cooperation the rule, long before the human mind had acquired the capability for

logical reasoning. Cooperation and appreciation for order reduce the range of individual action.

But, it may be said, these limitations are processed in the individual's mind and are not external compulsions which interfere with freedom. Yet, these socially oriented restraints are the basis for a large proportion of customs and laws. By its very nature civilization requires and imposes systematic brakes on individual impulses, brakes which are normally accepted unless or until people are led, or misled, to believe they belong to a different social unit or to believe those who enacted the restraints are outsiders.

We can never lose the urge for freedom entirely because it is an essential part of self. Even a bee or an ant has to have a dose of it to organize his behavior. But to be utterly realistic about freedom, we must think of it in a matrix of social expectations, customs and institutions.

Again, no man can be wholly free. Could you be free to drive your car down the left side of the center line of the road? If your conscience or a police officer didn't stop you, you would probably be more severely restrained by a head-on collision. At any event your freedom would be very short-term.

Order in social relations was probably preceded by or accompanied by order in minds.

The subconscious level of the brain stores an amazing number of facts and attitudes. But it isn't only a storehouse; it's a workshop. As facts accumulate from day-to-day experience, they are dumped together in a somewhat unorderly fashion. The ego does the sorting and organizing. From its main office on center stage, it attempts to maintain consistency in classifications and conclusions. It keeps a tolerable showing of order, but probably never quite measures up to its innate drive. However, when the information reaches the stage of consciousness, the semblance of order makes us feel pleased. If it weren't for the continuing cas-

cade of new and disturbing happenings coming to our attention, we would enjoy a moderately satisfying "frame of mind."

But the point is that the struggle for understanding goes on even while we are not conscious of it. Parables play a part. Sometimes we have reveries. We mull over what we said and what we could or should have said. Or we engage in fantasies, in which our imaginary role is more satisfying than our actual performance. The subconscious mind, with prodding from the ego, keeps active, not even coming to a full stop when we are asleep. In fact, it may be that processing new experience is a regular function of sleep, as automatic a function as the digestion of food.

In evolution, consistency and orderly thought have survival value in the same way that knowledge has. Fitting the facts together in correct patterns facilitates appropriate action and reaction.

We have now examined a number of feelings which unite us with other people. We have a hunger for companionship, for friendship, for attention, for acceptance, for recognition and approval. We want to be "wanted, loved and appreciated." We have the habit of indulging in sympathy, altruism and mimicry. We have a conscience, and we are prone to fear, joy and all kinds of suggestibility. All these drives, impulses and emotional states and traits support the proposition that we have an inherited social appetite.

Hopefully by this time we will agree that our social appetite is as truly innate in us as it is innate in baboons, chimpanzees, sheep, horses and honeybees. As we have tried to show, it is not a single motivating force but a whole neural and chemical motivating system.

Finally, it was because of the social appetite that civilizations came into being. Later we will demonstrate that it also destroys civilizations.

Chapter 4

Speech: The Tool of Sociality

Speech is civilization itself. The word, even the most contradictory word, preserves contact—it is silence which isolates.
Thomas Mann

The world has been indoctrinated by the anti-heredity behaviorists for forty years. They have never ceased repeating that heredity has almost no place in human behavior; that if a person behaves destructively the causes are solely environmental. Their theory leaves no room for the thought that most misfits are born not made. It therefore seems appropriate at this point to offer additional evidence that heredity provides the groundwork for civilization and that by ignoring heredity man is inviting his own destruction.

In pursuit of this evidence we will first turn our attention to speech, which would have had no function and would never have developed except for the social appetite. Having no survival value for the isolated individual in a harsh environment, speech is mainly important to the group and its cooperative efforts. The faculty of speech would not have been bred into man by countless mutations if speech had had no inherited motivational structure. The fact is the social appetite must have created a readiness for communication, a communicative capability as firmly anchored in heredity as the vocal chords and the tongue.

Favorable social attitudes, already fixed in inherited neutral patterns, must have been the nourishing matrix which led to the spread of mutations conducive to speech. Which social attitudes? Friendliness and cooperation, to name two. They would reflect the hunger for companionship, the yearning for approval, the altruistic tendency and many other aspects of the social area of the mind.

When did your ancestors learn to talk?

Miss Jane Goodall's work for the National Geographic Society has been widely publicized, particularly her study of the behavior of chimpanzees (*Science News Letter,* March 21, 1964). She found that chimpanzees communicate by means of more than twenty voice sounds. A similar facility must have been developed by our remote ancestors. Speech implies the ability to fit things, events and acts into certain categories, the ability to think not only of particular items but also of classes of items, which are represented by symbols. A word is a symbol and at least some of the twenty distinctive sounds of Jane Goodall's chimpanzees must have symbolized basic forms of actions or basic kinds of things. (Some could have been emotional symbols such as exclamations of joy or fear.)

Our ancestors were not yet human beings when they came down from trees more than twenty million years ago. In that long-ago era they were probably not even apes—just chattering monkeys. Our voice sounds must have started when we were still tree dwellers. This seems likely because most earthbound creatures risked extermination if they announced their presence with sounds. Only on special occasions do defenseless ground animals use sound signals.

The evidence is strong that the ape which evolved into man was a beast of prey whose survival was not endangered by oral expression. Raymond Dart in *Adventures with the Missing Link,* Robert Ardrey in *African Genesis* and Desmond Morris in *The Naked Ape* agree in that conclusion. Most

speech mutations probably paralleled the development of aggression.

In contrast with ground dwellers, birds are extremely vocal. They can afford to be because they can fly away from the danger that their song invites. Equally vocal are some kinds of monkeys. Trees provide safety from marauding tigers and other large flesh eaters. Our own development of speech might never have started if our ancestors had not spent a few million years in trees. There is a good chance that before they moved permanently to the ground they were already using a few meaningful sounds—probably more than the nine that present-day gibbons have and more than the twenty used by chimpanzees.

Each successive stage of communication has been essential to our transition to human status. C. Judson Herrick in *The Evolution of Human Nature* (p. 405) has this to say about the importance of speech:

> This ability to communicate with others through the medium of spoken or written words, pictures, and other objective symbols is the basic factor of man's superiority over all other living creatures.

Much of our thinking is in symbols, mainly in words. The effective application of symbols requires intelligence, which therefore has a close link to language. At a certain stage in the transition from the "dumb animal" level, a few individuals in our ancestral groups and later a majority could think well enough to be classified as human beings. Could we call the slow learners in the bright tribes human too? Or were some members of a tribe human while others still lacked the qualifications? If, on the way up, some individuals were human and some were not, then the same situation may apply on the way down!

It is well recognized that, since cooperation is a major factor in survival, for a considerable period during the de-

velopment of speech, collective action with others must have gone hand in hand with the development of intelligence. The connection between these parallel occurrences is their combined effect on survival. A favorable mutation in problem-solving ability would lead to more effective cooperation, if language were available to transmit ideas.

This does not mean that then, or today, the most intelligent people were or are the smoothest talkers. Intelligence had survival value apart from promoting cooperation. When verbal mechanisms, which seem to have paced the problem-solving ability for a few centuries, had become common to practically all mankind, mutations beneficial to intelligence appeared in other problem-solving areas.

Speech depended on various mutations in tongue, lips, larynx, pharynx and vocal chords. We learn about such matters in Carleton Coon's *The Origin of Races.* Some of these mutations occurred in our monkey stage, some after we became apes, and some since we, or most of us, became human.

Two books are especially useful for understanding the phenomenon of speech: *Biological Foundations of Language* by Eric H. Lenneberg and *Speech and Brain Mechanisms* by Wilder Penfield and Lamar Roberts.

As these authors point out, the machinery of the mind is very specialized. Brain cells with responsibilities for a tremendous array of specific muscle movements are pinpointed in certain areas. Even memory is separately located. One area in the brain is reserved for remembering experience; another for remembering a concept which results from experience. In both cases when we speak of memory, we must also include remembering the word or words that describe the experience or the concept. Consequently, a brain injury may leave the *concept* of "butterfly" but not the *name.*

The file of names is apparently in cells of the dominant hemisphere, which for most of us is the left side of the

brain. There are three main speech areas, one of them being near the rear of the dominant temporal lobe. A temporal lobe reaches from about an inch and one-half forward from the opening of the ear to about two inches to the rear of the opening of the ear, and an inch above. At the bottom, at about the level of the ear opening (the auditory canal), the temporal lobe curves under. Penfield describes the temporal lobe on the dominant side as the interpretative cortex where reasoning takes place.

Not only memory but reasoning, speech and writing are separately programmed. Writing, of course, involves a completely different set of symbols than the sound symbols of speech. Each category requires myriads of nerves. After training, some of the connections become automatic.

Intelligent speech requires that consciousness select concepts from a stored array. The nerves representing the chosen concepts shunt energy to nerves managing the corresponding word patterns. As Penfield says, "One must suppose . . . that the resultant activation of each concept brings up in turn the pattern of corresponding words by acquired automatic reflex action." Then the consciousness system "sends forth the patterned stream of impulses that end in speech or writing."

As we continue to quote from Penfield, be ready for "centrencephalic system." That is his term for consciousness.

Reception of speech implies a reverse process: Listening to speech or reading a book would send a stream of afferent impulses flowing inward over the auditory or the visual route, through the transmitting stations of the cortex, into the centrencephalic system. From here the stream must somehow exert its patterned effect upon the speech mechanism of the dominant hemisphere. Ganglionic counterparts of the words are thus activated in the speech mechanism. As each word complex is thus activated, it wakens, by its own automatic reflex, the corresponding concept. Thus, we have come around a circle which depends on the reflex connection of each word or succession of words

with each corresponding concept. The connection between speech mechanism and concept mechanism is evidently reflex and automatic.

The biological aphorism, "Ontogeny repeats phylogeny," means that the development of the individual repeats or summarizes the history of the species of which the individual is a member. I wonder if the timing of language in an infant with the simultaneous growth of the body parts may be a key to the timing of speech development in the evolution of our ancestors. The infant first walks erect at the age of about a year—shortly before he outgrows his bandy-legs. Some crude word sounds are heard soon after. According to the drawings in Raymond Dart's *Adventures with the Missing Link, Australopithecus* seems to have passed the bandy-legged stage at least a million years ago.

Eric H. Lennenberg concludes that the child's ability to form concepts develops to a surprising extent before speech. Corresponding developments in muscle and nerve capacities, memory and motivation are made at the same time.

In this connection an interesting experiment with a chimpanzee was conducted by R. Allen Gardner and Beatrice T. Gardner of the University of Nevada. The two psychologists taught Washoe, their chimpanzee, the Standard American Sign Language used by the deaf. At age five Washoe was using 130 signs, sometimes grouping two or more signs to make meanings. Among other things, she learned to name herself and friends, to ask for flowers, sweets and blankets, and to apologize for mischief and toilet accidents.

Washoe was later transferred to a chimp colony near the University of Oklahoma in a research program in charge of Dr. William Lemmon and Dr. Roger Fouts. By 1972 Washoe, at seven, knew 200 signs.

Another chimpanzee, Lana, at Yerkes Primate Center of Emory University, communicated by means of a special

push-key computer console of seventy-five symbols. Lana learned all seventy-five. Though only three years old, she would ask for a banana or other food, for music, and for motion pictures. To get a response to her requests, she had to put them in sentence form, starting with the symbol for "please."

The story of Lana is continued in *Reader's Digest* (Oct. 1975) in an article, "The Ape that 'Talks' with People." She was five years old by then. "Yerkish," the language of symbols devised for her, uses different colors in different positions, all activated by pushbuttons on keyboards. In her computer language, Lana demonstrates a mental grasp and resourcefulness far exceeding the expectations of psychologist Duane M. Rumbaugh, who has charge of the program, and Timothy V. Gill, one of Lana's teachers. In many ways she is more intelligent than retarded individuals of the human species.

The reports on Washoe and Lana teach us how utterly incapable of civilization human beings would be without speech.

What I have written about speech and the inherited social appetite which brought it into being should not be construed as downgrading environment as a cause of specific human behavior. Dr. Anne Anastasi, eminent Fordham University psychologist, was right in her statement that every act is a result of heredity and every act is a result of environment. No individual could be what he is or do what he does without the influence of both. No society could be what it is or do what it does without the influence of both. My emphasis on heredity in this book must be understood as a constructive and necessary reaction to the intolerance of the behaviorists who have almost succeeded in making heredity an illegal form of scientific study.

At this point, we will need one more chapter to set the heredity record straight. Social motivations are not without inherent boundaries.

Chapter 5

Constraints on the Social Appetite

You ought to see the human zoo
Within us caged and hid.
The Ego's perched upon a perch,
Beneath it is the Id.

The Soul is basking sleepily,
The Psyche makes a fuss.
Come see the zoo, but when you do
Don't feed the Animus.

Richard Armour

For many millions of years the social impulses in our ancestors' brain cells were enhanced and refined by the winnowing out of members who had strayed from the tribe. The group feelings of those who survived were thereby strengthened. When there was tribal division, generally due to the number of tribesmen exceeding the local food supply, the gregarious traits were carried over in full strength to the new tribe.

Nevertheless, after long years of separation when members of the old and new tribes met, they met as strangers. If at that time food was again scarce, they also met as competitors, and in many instances as enemies.

Eventually, there were "our" group and "other" groups, ingroups and outgroups, we-groups and they-groups. If a group made no distinction between "us" and "them," it was crowded away from the best sources of food, and had

less chance of survival. There was little, if any, survival value in mutations that broadened the social impulses beyond the nuclear group. Conversely, except for occasional tribal confederations in the event of a widespread war, there was survival value in maintaining the ingroup's exclusivity—and keeping the outgroups out.

As previously stated, all of our ancestors' evolutionary life as primates was tribal. That means millions of years of tribal living—hundreds of thousands of generations! And all the while emotions developed accordingly. A sweeping friendliness for all mankind would have had no survival value. Actually it would have exposed its possessors to great dangers.

So intelligence continued to increase because it solved problems, which extended the longevity and the procreational time span of those who possessed it. At last men acquired enough problem-solving ability to see the advantages of the division of labor and other practices and processes that make up a civilization. Civilization, throughout much of the world, put an end to tribal living, which had been the maternity ward of the social appetite.

Though civilization did not change inherited drives and motivations, it did permit, through use of previously acquired intelligence, a broadened application of the social impulses—but one by no means broadened to the extent of freely substituting "mankind" for the tribe. The proportion of people who had a friendly feeling for strangers still remained very small. Only recently have we tried to rely on reason to soften the code of enmity.

Psychological obstacles became even more formidable as more extended social units were substituted for tribes. A country with as many differing population groups as the United States has to elicit patriotism largely by relying on what Ardrey calls "The Territorial Imperative." Very little patriotism can be evoked by social appeals.

But if a tribal situation should recur, the smoldering loyalty of millions of years bursts into flame. A boy is lost

in the forest? Policemen, Boy Scouts, The National Guard —thousands of volunteer "tribesmen"—comb the area, and bring him home. Six inches of rain flood the lowlands and threaten the lives of the inhabitants. Local Lochinvars and Noahs bring horses and boats to the rescue. The feeling of comradeship engendered by such crises can only be described as an explosion of the smoldering tribal spirit.

Normally, what we have "in our bones" for strangers is hostility. We feel it in different degrees for foreign nations. And we have the same feelings of distrust for various groups of outsiders, even for individual strangers. The social side of mind, as it developed, never opened wide enough to include all members of our species. The more people differed from the ingroup norm, the more certain they would be classified as aliens and outsiders.

"Consciousness of kind," a concept developed by sociologist Franklin Giddings, was a fashionable phrase in the early years of this century. It has a measure of validity, and helps clarify one of the most important restraints on gregariousness. It means that even such "loose" associations as country clubs and scientific societies are based on feelings of exclusivity and sameness.

The London *Spectator* (July 25, 1970) asserted: "Men are not indefinitely gregarious by nature, but are familial and tribal. By and large they like and prefer the company of their own kind." The article then went on to state "it is fairly certain there are distinctive differences between ethnic and racial groups which can be categorized in terms of 'gene pool.' "

In this connection the columnist Kevin Phillips (May 6, 1973) points out that Europe is having its own ethnic upheaval. Not only in Northern Ireland, but in Scotland, Wales, Brittany, the Basque provinces, Catalonia, Aosta, Trentino-Alto Adige, Jura, Alsace, Belgium and Carinthia minorities and provincials are pushing increasingly for ethnic recognition and identity. Tribal psychology is alive and kicking.

Our hereditary social appetite, as we have seen, is sweeping and intense. But it was born, and so far has spent the overwhelming proportion of its existence, in tribal groups, in which likeness was the signal for amity and acceptance, and difference the signal for hostility. Consciousness of kind involves an assumption that physical similarity is accompanied by a similarity of attitudes.

For instance, a mother of three is likely to notice that the two children who are nearest in age often form a partnership which excludes the third. Age discrimination is also likely to occur in later stages of life. Consciousness of kind seems to be the most reasonable explanation.

A youth's close association with other youths results in a "generation gap" between him and his parents. The gap is now much wider than ever as a consequence of the increasing complexity of social environment, glorification of the ego and sensationalized television programs.

Consciousness of kind often reduces to consciousness of different attitudes. The parent-child schism is a typical case. Richard Armour gives the problem a light touch:

Pleasant Company Accepted

I know what makes a good companion
On mountain top or in a canyon,
In living room, hotel, or bar,
Wherever such companions are,
At parties large, at parties small,
Or just the two of us—that's all.

And here, resolving your confusion,
Is my remarkable conclusion:
The people I most like to be with
Are those, I've found, whom I agree with.

Attitudes are often in conflict with attitudes and emotions with emotions. Fear may command you to run away, but hunger says no, you can't go yet. Frequently ego feelings are antagonistic to social dictates. Ego says, "These

expenses would look reasonable for income tax purposes if I double them." Conscience, the social monitor, responds, "You'll do it over my dead body." Ego says, "That trash container is forty yards from here so I'll just drop this pop bottle on the lawn." Conscience says, "You litterbug."

But the big battleground is where all the conflicting commands are socially motivated. Mark Twain felt pangs of conscience when he fed a worthless beggar, but his conscience hurt worse when he turned the beggar away.

Our current civilization is overloaded with a multiplicity of behavior codes, many widely different and most of them clashing. Some individuals, as they lose themselves in a maze of conflicting doctrine, cannot make up their minds about anything and are swayed by almost every sort of external influence. Others make up their minds too quickly and are fierce protagonists for causes which may be of vital importance or may amount to nothing at all. But the worth of the cause does not matter. They are part of an ingroup. They belong.

Few people know very much about their own pet "cause" (or any other). Many who clamor for change are really demanding more leeway for the egocentric drives they call "freedom." They want greater leniency for robbers, dope peddlers, rapists and murderers on the ground that society made them what they are. Society surely has something to do with its human end products. But whatever the cause of faulty behavior, offenders must be punished. Punishment, if prompt and severe, is a very important conditioning influence on potential lawbreakers. Forgiving criminal behavior is an invitation to repeat such behavior.

Intelligence acts as a referee for feelings. In a normal array of attitudes we are basically hostile to any challenges to our *amour propre.* This hostility is overcome and suppressed by gregarious drives which can be described as the rounding out of the incomplete individual by association

with others. But gregariousness is normally limited by consciousness of kind.

Reasoning plays a continuing part in the working out of both social and self-centered drives. In a person of high intelligence, reason often suppresses direct emotional responses or finds a more acceptable and more logical reaction.

If amity is to be extended beyond the scope of association, either geographically or to a different group within the community, reason has to do the job with very little support from innate emotions and impulses. The assumption that all men are brothers may be factual, if we go far enough back in heredity. But they are no longer members of the same tribe, and so cannot be expected to act as members of the same tribe. Most people, in unfamiliar relationships, cannot pledge allegiance to an abstract social structure or to an alien ideology. If you understand a person, we are told, you will consider him a friend. This happens rarely. More frequently, to understand a person may lead to fearing or disliking him.

In a civilization, and especially in a complex civilization in which conditioning influences are legion, our interpretation of our surroundings is likely to diverge from that of our neighbor. He may gravitate to one ideology, we to another. The biggest herd is the national government. This may include a vast array of subherds, many of them discordant. Our standards and our conscience will probably derive from one of the small herds.

The more complex the large group becomes, the more points of difference will arise between it and the member groups. The more functions the big herd assumes, the more its members will become captive members, and the more thought-control is likely to be exercised by the big herd's leaders.

In such manner our so-called "Federal" government—a misnomer in an age of centralization—usurps more power and functions, and its citizens become increasingly restless.

To bring them voluntarily into line the government exercises greater influence on our educational system as it spends a larger proportion of our income. The USSR has a system of thought-control that supports its totalitarian functions. The United States is proceeding rapidly in the same direction. Present pressure on our schools for racial integration is a typical example.

The age-old habit of personalizing government tempts people to praise or blame our political leaders for everything that happens. The truth is that our leaders may accelerate or retard change, but increasing population and more involved human relationships are two of the chief reasons for change—and these automatically require greater curtailment of personal decision-making. Since the complexity of government is now beyond the comprehension of average citizens, democracy is sure to fade. Some visionaries would centralize government even further, advocating a world state. They do not perceive the straightjackets that go with such dreams.

So unequivocally does civilization depend on mental attributes that the subject deserves further study. Thus far we have seen that gregariousness, which evolved through millions of years of herd and tribal association, maintains a boundary, an outer edge at which social drives cease to operate. Toward persons outside "the tribe," a feeling of suspicion, if not hostility, is normal.

Anthropologists and ethologists have built up a considerable literature on the subject of aggression to support the conclusion that hereditary social impulses are limited to individuals who are in face-to-face association.

Aggression is the tendency to question or challenge the claims of others, either by competition or violence. It may be expressed by single individuals, by teams or by armies.

Is aggression conditioned or does it spring directly from heredity? The answer is that it is very close to the ego compartment of the mind, though when displayed by

groups it also makes use of the cooperative mechanism of the social impulse. In other words, there can be and often is cooperation with associated individuals in aggressive activity against other individuals or groups.

Prominent among anthropologists and authors who have concluded that aggression is an inherited drive are Konrad Lorenz of Austria, Niko Tinbergen of Holland, Anthony Storr of England and Robert Ardrey of the United States.

In his book *Human Aggression* Storr writes that a child has offsetting tendencies. One tendency is to cling to its mother. The offsetting tendency is to "explore and master the environment." The latter is the aggressive trait and it gradually results in independence from the mother. Storr writes that such tendencies, somewhat modified, persist in adulthood. Being social, a person needs other human beings. On the other hand, he must preserve his identity. Consequently, exploring the environment and preserving identity are both expressions of the aggressive drive.

In effect, Storr is saying that the mere fact of doing something independently is a characteristic of aggression. He quotes D. W. Winnicott, who wrote, "At origin, aggressiveness is almost synonymous with activity."

Storr thinks of positive functions of aggression as: (1) the spacing out of population; (2) sexual selection; (3) defense of the young; (4) establishment of rank; (5) establishment of order; (6) overcoming obstacles; (7) mastery of the external world.

Incidentally, the recognition of the child's innate tendency toward independence does not imply that there is anything beneficial about parental permissiveness. The child has to learn that there are limits to his power, while his parents have to curb his explorations for his own safety. If parents become submissive, the child will no longer be convinced "that his parents are able to cope both with the world and with himself." This idea may be shattering to the child's development.

Parents should give their children books about men who

perform heroic tasks against heavy odds. But the heroism should derive from persistence and skill, not violence. Parents, both in reality and in their children's books, must be regarded as the hero's supporters, not his enemies.

Territoriality is an inherited mental characteristic of many species, including man. Storr and Konrad Lorenz see territoriality as coincident with aggressiveness. A feeling of proprietorship over real estate is necessarily accompanied by a willingness to defend one's occupancy. In some instances the proprietorship has been individual, in some instances tribal. Either way, territoriality and aggression are inherited psychological limitations on social impulses. Reason may stretch the social inclination beyond the tribal boundaries, but with every expansion there are additional strains, additional captive groups, additional irritations. A knowledge of man's heredity assures us that worldwide political sovereignty would almost certainly lead to worldwide chaos.

Chapter 6

Death—The Servant of Life

We build, like corals, grave on grave
But pave a pathway sunward.
Anonymous

We should be aware that the creation of man was not a piece of magic. "To create," says the *American Heritage Dictionary,* is "to cause to exist . . . to bring into being . . . to originate." Adam's birth took millions of years. How many millions depends on when in the evolutionary process we begin the countdown, and at what stage we label our ancestor *Homo sapiens.*

The facts of human evolution are voluminous, fascinating and important. We will start with the early men who lived in Africa about 750,000 years ago. Fossil remains of at least seventy-four individuals have been studied. Since *Australopithecus africanus* was a fairly close cousin of ours, let's look him up in our anthropological *Who Was Who.*

Australopithecus was discovered in 1924 by Dr. Raymond Dart, an Australian who had been educated in England and the United States. In 1922, when Dart was head of the Anatomy Department of South Africa's Witwatersrand University, Josephine Salmons, a student in one of his classes, brought him a fossil baboon skull which had been found in a lime works in a village about a hundred miles south of Johannesburg.

A baboon belongs to that broad subdivision of mammals called primates, which also includes monkeys, lemurs and other species with similarities to apes and human beings. Dart was quite excited about the baboon fossil and he aroused the interest of a geology professor, Dr. R. B. Young, who arranged that Dart should receive some more fossil-bearing rocks from the same lime works. In these Dart found the mineralized skull and face bones of a youngster about five years old—a youngster, incidentally, who was not a baboon!

Dart named the species to which the infant belonged *Australopithecus africanus* or South African Ape. The find was called the Taungs skull, and the infant that died three-quarters of a million years ago has been called Dart's baby.

Robert Broom, a distinguished zoologist, saw the Taungs skull in 1936. Considering it the most important fossil ever found, he undertook a search for other specimens. He found several. Dart got into the act again and found many more.

Living anthropoid (manlike) apes are of five kinds: chimpanzees, gorillas, orangutans, gibbons, and siamangs. *Australopithecus africanus* was more like us than like any of the above. He walked and ran in an erect position, as proved by his short pelvis and the way his skull was balanced on his spine. His biting apparatus was much like ours; his canines did not protrude, though their roots were large—vestiges of the days when canine teeth (fangs) were used for fighting as well as for tearing food.

The big roots of our own eyeteeth tell us that our ancestors not only had fangs, but must have used them as weapons. A mutation which reduced the length and sharpness of fighting teeth would have made the mutant an easier victim for hyenas, wolves, snakes, baboons and other carnivores, *unless* he had invented weapons to replace the innate armaments taken from him by nature.

For years some scholars doubted that *Australopithecus* had used weapons. Sherwood L. Washburn, in "Tools and Hu-

man Evolution," *Scientific American* (Sept. 1960) and Robert Ardrey in *African Genesis* (1961) relied on the "lost fang" theory to claim that *Australopithecus* had weapons, even though no trace of any such weapons had been found. They further asserted that the only way such a mutation could spread so widely was the regular employment of hand weapons to insure that there were enough survivors to pass the mutation around.

The question arises: How is it that both *Australopithecus* and ourselves lost our fangs, yet kept our big canine roots? The answer is that if there was no need to fight, ordinary teeth would be more efficient than oversize canine teeth. Biting and chewing would be easier and the process of digestion would be improved. There would be a positive value in mutations which substituted biting and chewing implements in place of protrusions that had lost all their usefulness. But there was no positive value in reducing the size of the large roots. They serviced the biting and chewing functions as well as smaller roots. So there was no reward for a mutation toward smaller roots.

Australopithecus brain sizes ranged from 435 to 700 cc., about the range of gorilla brains. But a gorilla has more than four times *Australopithecus's* body size. According to Carleton S. Coon, "the mean weight of adult male gorillas is about 400 pounds." Dart gives the probable weight of *Australopithecus* as less than 100 pounds. For comparison, in modern America, brains probably average between 1400 and 1500 cc., a little more than twice the cerebral volume of the smartest *Australopithecus,* though our bodies are less than twice as large. W. H. Sheldon in his *Atlas of Men* considers 165 pounds as our average adult male weight. The ratios of brain size to body size may be our most important criterion for distinguishing human beings from other primates. The human classification seems only a matter of degree.

Before leaving Dart's weapon-toting ape, we should point out that tool-making is not a uniquely human talent.

Jane Goodall testifies that she has seen chimpanzees use leaves as napkins to wipe their sticky fingers and to scoop up water for drinking. They also dig for termites with twigs, and throw stones to frighten away enemies.

In his *Adventures with the Missing Link* (p. 167), Dart recounts that a hunter came upon eight excited chimpanzees in a small clearing in a Cameroon forest. They were sitting around the opening of a nest of ground bees. One after another would dip a stick in the hole and withdraw it. Each chimpanzee would then lick off the honey and dip the stick in again.

The Leakey family has contributed greatly to the knowledge of mankind's past. Dr. Louis Leakey was curator of the Coryndon Memorial Museum in Nairobi, Kenya, from 1945 to 1961, and later was director of the Nairobi National Museum Center for Prehistory and Paleontology. Since 1926 he has been fossil hunting in East Africa, where he and his wife Mary have unearthed about 600 primate fossils, all of them related to distant ancestors of ours, some much more distant than others.

Significant among the discoveries of Dr. and Mrs. Leakey has been the ancient manlike fossil they called *Zinjanthropus,* an early *Australopithecus*-type individual that lived at least a million years before "Dart's Baby." More recently, the Leakey team has found evidence that dated *Australopithecus* back to 2,400,000 B.C.

In 1968 Richard Leakey, the son of Louis, decided to investigate a soil area at the eastern shore of Lake Rudolf, in Northern Kenya, which after millions of years had reached a thickness of 2,000 feet. His findings were reported in *Science News* (Nov. 27, 1971, Feb. 26, 1972 and Nov. 18, 1972).

It had previously been estimated that *Australopithecus africanus* had evolved into *Homo erectus* about a million years ago, but Richard Leakey found fossils which were definitely more manlike than previous discoveries, and yet were

shown by potassium-argon dating and other methods to be 2,600,000 years old.

In that dim, dark past there were manlike creations with a brain capacity of 800 cc. Compare that with your own (about 1500 cc.) and the prehuman *Australopithecus* (435 to 700 cc.). It seems clear that our ancestors had graduated from their apehood way back in Pliocene times.

Richard Leakey thinks of *Australopithecus* and *Homo erectus* as coexisting in the early Pleistocene. That is not to say, however, that they had different lineages. It merely says that *Homo erectus* had branched off from the same family tree earlier than previously supposed, and that it took a longer period for the more gifted branch to displace the less gifted. Leakey's discoveries also provided more conclusive evidence that *Homo erectus* had received his hominid mutations before he left Africa for Europe and Asia.

We are talking about 2,600,000 years ago, which means that at least 100,000 generations of our ancestors have lived, had offspring and died since then. It also means that there has been ample time for great and significant changes by variations, mutations and the early deaths of unadapted brothers, sisters, children and tribesmen.

To understand who were deprived of direct descendants by early death we must first look at human beings in a state of nature, when each individual had to provide for himself in much greater measure than now. Hardships were frequent and severe. The strong, quick, alert and intelligent people could either handle the dangerous situations or dodge them more successfully than their weaker, slower, less alert or less intelligent relatives and tribesmen. Those with fewer of the favorable traits, or more of the unfavorable traits, were much more likely to die—and die early, before they themselves could reproduce.

Quickness, speed, alertness, vision, hearing, perception, physical strength and intelligence are to a great extent transmitted via the genes. But individuals vary in their endowment of these and other characteristics. Even brothers

receive them in unequal measure. In the faraway past, more of the less nimble humans died in childhood, killed perhaps by hyenas and black panthers. As a result, later generations were more alert and could run faster. They were the descendants of fathers and mothers who had been able to escape the beasts of prey.

Evolution depends on mutations, which are changes in the genes themselves—changes in the biological pattern of the individuals. Some are beneficial, but most are harmful. Occasionally primitive people with a favorable mutation changed their location because food was getting scarce. Moving about, they would come in conflict with a group without the favorable mutation. More of the latter would be killed, thereby resulting in a disproportionate "survival of the fittest." Unless death had culled out the weaklings, the less fit would have reproduced, and subsequent tribal generations would have been no more advanced than earlier ones.

Death not only removed a deficient individual from a blossoming society, but it removed his genes from the gene pool of his tribe. Consequently the tribe and the species were both improved by nature's program of "negative eugenics." Death, by permitting the winners to mate and denying the privilege to the losers, was a "servant of life."

The time-tested process by which humans climbed up from the ape is often gruesome, but magnificent in its end product—Man. Clement Wood caught some of this magnificence in his poem, "Time."

> The rock is dead, and does not mark Time's going;
> The grass that feeds upon its aging head
> Takes of the ancient soil to speed its growing,
> But to Time's passing is forever dead.
> The pine that shivers on the windy height,
> The seaweed dozing in the stagnant sea,

Are blind to blazing sun and blinded night,
  As to the gray stretch of infinity.

The deer that crop the grass are more than these,
  Stirring upon the stirless face of land;
The bird that has its choice of kingly trees
  Kings it, all unaware that near at hand
There is a hidden and a precious way
  To make long yesterdays nourish today.

Why, there are larks that wake the English woods
  Whose fathers saw fierce Caesar beach his keel,
And shake the Druids' solemn solitudes
  With the harsh clangor of the naked steel.
There are sleek dolphins in the tossing spray
  Whose ancients saw Apollo come to port,
And yet their knowledge cannot leap today,
  Nor spin the heavy ages for their sport.

Forever locked to grass and toughened tree,
  Forever barred from animal and bird,
The travelled vistas of eternity,
  The dust the marching centuries have stirred.
They are Time's abject creatures; they are slaves,
  Who crumble dumbly into crumbling graves.

But out of jungle loins a being came
  Fitted to smooth the jungle to his will,
Whose groping vision sharpens to a flame
  That leapt lightly above your highest hill;
One who could add one day unto another
  Until the hoarded store was rich and vast;
Kin of the ape and the strong eagle's brother—
  And yet himself, and none of these, at last.

Now tremble, Time, for your unbroken sway—
  Here is a lord will share your ancient throne.
He travels far beyond the thin today,
  And makes forgotten yesterdays his own.
The half-chained spirit, Time, shrinks at man's nod—
  And a whole conquest makes of man a god.

Wood may have carried his glorification too far. But in contrast to the "stirless face of land" or "the pine that shivers on the windy height," or even the deer, the larks and the dolphins, the sons of apes have done all right.

How many ancestors have you had in the 100,000 generations of man since the great days of *Australopithecus?* Even a computer would be incapable of answering, because many of our ancestral lines have merged.

Nevertheless, the number of your direct ancestors runs into the millions. In your great-grandfather's generation, you had eight ancestors. In the tenth generation before you, you had 1,024 direct ancestors, unless there were some cousin marriages. Since each ancestor had two parents, just try doubling the numbers for each generation. Allowing thirty years per generation, in the last ten generations you had 2,046 ancestors. That many forebears since New Amsterdam became New York!

In the 20th generation before you, you had more than a million ancestors. In 100,000 generations the figures would be fantastic, if it were not for the merging of ancestral lines. With all that genealogy in your family tree, it is not surprising that favorable variations and mutations, together with the elimination of the tribal members who did not share them, have given you some special talents—most importantly, talents that have to do with thinking.

Unfortunately, a great deal of suffering took place as these favorable mutations and variations were imprinted in your heredity. The evolutionary process brought about the untimely death of countless individuals who lacked favorable variations and mutations. Hunger, cold, accidents, germs and carnivores also took a frightful toll. Yet, among the many millions of your direct ancestors, not one was a victim of infant mortality. Every one of your forefathers had what it took to survive! Otherwise, you would not be here.

As an example of evolutionary extremism, we can point

to the Black Death. What more conclusive proof do we need to show:

(1) That the benefits of civilization are not free;

(2) That evolution's wild, almost hit or miss, method makes evolution awfully costly;

(3) That human reason has done a good job breeding domestic animals and plants, and could also do a good job, given the chance, with humans.

The Black Death struck England in 1348. Within two years, says the *Encyclopaedia of the Social Sciences,* "a loss of one-third of the population appears to be indicated in many cases, and a much greater loss in a few villages and towns."

Before the plague struck, the English people had been increasing for many years and were outstripping the food production necessary to keep them alive. Conditions were verging on famine when the Black Death arrived from China via Italy.

In London nine-tenths of the inhabitants were lost. Although "lost" seems to imply harm, this is one of those instances in which a short-run minus can be a long-run plus. As a consequence of so many deaths, labor was scarce and land became plentiful. Wages shot up in spite of "controls." Enclosure of lands for use as sheep pasture was profitable. All in all, Englishmen who survived the plague were more secure and worth more per capita than the more numerous Englishmen of the previous era.

There were also some genetic benefits. The Black Death was bubonic plague in combination with primary pneumonic plague. Fleas transported on rats were the main carrier. The *Encyclopaedia of the Social Sciences* tells us that the proportion of deaths among "the richer classes" was low.

We may safely assume that the richer classes included more than an average proportion of *capable* people, and that the crowded slums held more than their share of *incapable* people. Also, since intelligent persons, whether rich

or poor, are more careful about rats and insects than unintelligent persons, a smaller percentage of the former would have been bitten by the infectious fleas. In Scotland, "the meaner sort and common people" comprised most of the plague victims.

The Black Death, a concentrated dose of evolution, helped to usher in a society which was more efficient than the one that had preceded it, while it also set the stage for the agricultural revolution. Because of the scarcity of workers, more attention had to be paid to developing labor-saving devices for the farm. Freed by necessity from the "web of custom," more analytical minds went to work. A new wave of prosperity encouraged improvements in maritime trade, which in turn was a stimulus for the industrial revolution.

A less extreme demonstration of evolution was furnished by the American Pilgrims. There are, as Ellsworth Huntington has intimated, selective processes involved in long and difficult human migrations. Since those who arrive are generally superior to those who start, the best-fitted Pilgrims reached the colonies.

The Pilgrims were separatists who disapproved of the easygoing Anglican Church. This separation, in itself, was part of a sorting process. Another weeding out took place in the migration from England to Amsterdam. Still another derived from the decision to go on to Leyden in 1609.

In the first New England winter, the weeding out was severe. In addition to one man who had died at sea, six died in December, 1620; eight in January, seventeen in February, thirteen in March. Of the forty-one who signed the Mayflower Compact, only twenty were left alive by the beginning of April, 1621—less than four months after their arrival. There were six more deaths by the time the ship *Fortune* arrived in the fall of the same year, making a death toll of 51 of the original 104. After this came the famines of 1622 and 1623. Most Americans tend to forget that the

process of biological evolution, the weeding out of the less hardy, the less adaptable and the less wise, which had been active so long among wild creatures and primitive peoples, was also at work among the first white settlers of New England.

Conditions improved in the next decade, yet of the 2,000 who migrated to Massachusetts in 1630, ten percent died in the following winter. At that time most of the settlers were coming to the Massachusetts Bay Colony. Selective processes were evident in this migration because the arrivals included a considerable proportion of prosperous merchants.

Is there any evidence, besides the logic of the evolutionary mechanism itself, to show that the surviving Pilgrims and Puritans were superior to average Englishmen?

In *Mainsprings of Civilization* Ellsworth Huntington classified New England surnames in four groups, according to dates of arrival in America: those arriving in 1620–1635; in 1636–1643; in 1644–1692; and in 1693–1790. He then estimated what proportion of people in 38 American cities bear those names, and what portion of these achieved distinction. He pointed out that, although they come from a much diluted stock, "the differences between people descended from Puritans who arrived in America early in contrast with those who arrived later are surprisingly great." Members of the 1693–1790 group, he asserted, "did not undergo such difficulties as beset the earliest migrants," so they had not been weeded out in any comparable proportion and their achievements had been fewer and far between.

One of Huntington's studies relied on names in *Who's Who in America.* In each occupational field he found nearly twice as many people whose ancestors came here in 1620–1635 as those whose ancestors came in 1693–1790. Among other things, Huntington compared the inventive talents of descendants of early arrivals to the population at large.

He found that the posterity of the early colonists had been given patents in far greater proportion than the general population.

Here we should refer to a scholarly study by Stephen Sargent Visher, *Scientists Starred, 1903–1943.* Visher provides a goldmine of interesting and useful information about outstanding contributors to scientific knowledge. Of the fifty women who were named as outstanding scientists, almost all were of Puritan descent. Of the men, a larger number were descended from Puritans than from any other group.

The beginning of American civilization was unique in its details, but not in its general pattern. As everywhere, the weeding out of the weaklings and the consequent improvement of the average biological level of the group preceded the high points of civilization—and the more rigorous the weeding, the more phenomenal the subsequent achievements.

Virginia serves as another example. Five thousand people migrated from England to the vicinity of Jamestown in 1606–1624, but by the end of that eighteen-year period only 1,200 had survived. Three-fourths of the migrants had succumbed to starvation, Indian attacks, malaria and other misfortunes. Could these tragic experiences be a partial explanation of the fact that seven of the first twelve of our country's presidents were born in Virginia?

The "creative minority," to which Toynbee refers in his *Study of History,* has been dazzlingly inventive in America. Take one of its most gifted members, Benjamin Franklin. In 1742 he invented the stove that still bears his name. In 1746, at age forty, he was the first to discover that static electricity is both positive and negative. In 1748 he designed the first pair of bifocal glasses. In 1752 he invented the lightning rod. In that year he also experimented with heat conductors. In 1768 he wrote of the cooling effects of evaporation. Later he found that boats of slight draft

move faster in a canal than those of deep draft. In 1769 he charted the Gulf Stream.

Besides brilliance of a scientific sort Franklin organized the Philadelphia Fire Department. He was a member of the colonial Pennsylvania assembly. He was postmaster general of the American Colonies. He authored *Poor Richard's Almanack* and edited the *Pennsylvania Gazette.* He founded a circulating library that became the Philadelphia Library, a discussion group that became the American Philosophical Society and an educational institution that became the University of Pennsylvania.

Franklin's work as a diplomat and as one of the formulators of the American Constitution is widely known. His proposal at the Albany Congress of 1754 for a colonial union was further proof of his wisdom. It was rejected, but it might have given us independence without a war.

Exhibit number two is Eli Whitney. In 1798 the United States government gave Whitney a contract to make 10,000 muskets. When the contract's two-year deadline expired, only a few of the muskets had been made. Unsurprisingly, the government was disturbed at what appeared to be the almost complete failure of Whitney to live up to his agreement. But the inventor called a meeting in which he displayed the unassembled parts of ten muskets. The parts were interchangeable and represented one of the first demonstrations of mass production techniques. The government inspectors were quickly convinced that they could have their 10,000 muskets in a hurry, and as many more as they wanted. (Earnest J. Knapton in *Europe, 1450–1815* tells us that Christopher Polhem of Sweden was "a pioneer in producing standardized interchangeable parts" around 1700. But the genius of Polhem dims not at all the talent of Whitney.)

The intellectual climate of America was favorable to invention. So was the political and economic climate. In 1791 Congress passed a law granting patent rights to inventors. But more than a century and a half earlier the early colo-

nists had demonstrated their genius for innovation by using water power to operate windmills.

Later a number of saws were arranged in a gang that would saw several boards or planks at once. The still more efficient circular saw followed.

Timber was abundant: white oak, pine, hickory and maple. The colonists used the saws to make lumber for houses, furniture, barns, boats and ships. John Smith built some fishing vessels on the coast of Maine in 1614. The *Trial* was completed at Boston in 1642, a sturdy craft of at least 160 tons, approximately the size of the Mayflower. Bear in mind that Boston, the first permanent settlement of the Massachusetts Bay Colony, was established by Governor John Winthrop on June 17, 1630, only twelve years before the *Trial's* launching. Its length was twice that of today's average American house. By 1676, 730 vessels had been built in New England, and some 300 of them were sailing out of Boston in the coastal trade.

A century later, at the beginning of the Revolutionary War, New England citizens owned as many as 2,000 vessels, in addition to fishing boats. Almost one-third of the ships of Great Britain had been built in the colonies. There were large industries engaged in sail making and rope making and the forging of anchors. Iron for the anchors, rudder fittings, spikes, chains and chain plates was available after a mixture of vegetable mold and iron oxide had been found at the bottom of ponds and bogs near Lynn, a few miles northeast of Boston. Some samples were sent to England for testing. The reports were encouraging. John Winthrop, Jr., son of Governor Winthrop, organized a company with both English and colonial members for the purpose of making iron from the bog ore. The firm set up a furnace, used charcoal as fuel, sea shells as flux, and a bellows powered by a waterwheel. The enterprise was almost immediately successful. In a few years deposits of ordinary iron ore were discovered, and other iron works were started. After 1710 the development of the industry was rapid. By 1775 Arthur

Bining reports in *The Rise of American Economic Life,* "There were more blast furnaces and forges than in both England and Wales."

Hat making, cloth making, flour milling, lumbering, fishing and several other industries dotted the colonial scene. But the fact that the colonies, so soon after their establishment, surpassed the mother country and the rest of the world in such basic industries as iron forging and ship building must mean that early Americans had an unusual inborn capacity for achievement. There have been other transplants of civilizations. But has there ever been a more productive one?

The determined, purposeful, intelligent people who comprised the first settlers were the pure gold that remained in the pan after the sand and mud were washed away. No doubt there were many highly intelligent individuals who remained in England, but they had to spend much of their time and effort taking care of the nonproducers. In America at that time there were almost no nonproducers. Brain power could concentrate almost exclusively on building the future.

Arnold J. Toynbee in *A Study of History* mentions the marsh men who lived and still live in the delta near the outlet of the Tigris and Euphrates rivers. They adapted themselves to the environment, but, Toynbee adds, "they have never yet girded themselves for the task which the fathers of the Sumeric Civilization accomplished in similar country nearby some five or six thousand years ago, of transforming the marshes into a network of canals and fields."

As to the manner by which the quality of a group is improved, Toynbee uses figurative language, but it seems to hinge on the elimination of weaklings. Repeatedly he states that if the challenges to men are tough, many groups will fail. But the response of the successful group will be all the more brilliant. At one time in history, Toynbee reminds us, the Cossacks were under crushing pressure from

Mongol nomads. They withstood the pressure and transformed the nomads' cattle ranges into peasants' fields. The Cossacks had been "tempered in the furnace and fashioned on the anvil of border warfare."

Pitirim A. Sorokin in his monumental *Society, Culture, and Personality* (p. 541) included heredity as one of five basic factors in the rise of new social systems. "One is not obliged," he said, "to subscribe to the claims of extreme hereditarians and racialists to perceive that a fortunate heredity is a prerequisite condition." Then, listing several creative persons who had made notable changes in the human condition, he observed that education and affluent parents could not account for their achievements because in some cases the achievements had been made without any such advantages. The point was that such men had a special biological headstart. And finally, said Sorokin, the fact that few social groups have been creative suggests that those who were creative had a favorable biological heredity, "especially when it can be shown that the environmental opportunities of many uncreative groups have been better than, or as good as, those of the few creative groups."

Chapter 7

Evolution in the Ice Ages

Evolution is the key word which will either answer all the riddles which surround us or put us on the way to their solution.
Ernest Haeckel

One of the controlling influences in man's journey to the sapient stage was cold weather. The Ice Ages were harsh schoolmasters who kept asking life-and-death questions. Was a tribe too far north? Did its members have suitable shelter for the winter? Did they have fur clothing? Did they lay in an ample supply of grain, nuts, honey, dried fish? Was wood handy to keep the fires blazing?

Freezing temperatures were not good for individuals in the Ice Ages. But for the species—that is, for the descendants of those who survived—the frigid weather was a benefactor. Parents didn't have to worry that their daughters would mate with worthless young men. When nature gets rough, there are no worthless young men! From the standpoint of eugenics, the hostile climate raised the intelligence level of the survivors' descendants sufficiently to pave the way for civilization.

There were human beings in Europe about 600,000 years or 24,000 generations ago. This was the time of the Ice Ages. The weather had been growing colder and colder for many thousands of years before that. After unnum-

bered earlier ice ages, the Gunz Glaciation was probably the first to affect human heredity. It lasted about 50,000 years. After that came some 70,000 years of mild weather, which has been named the Gunz-Mindel Interglaciation. The Mindel Glaciation was the second such protracted period of selective influence on human survival. A vast ice sheet piled up and extended slowly down into Northern Europe. It lasted, according to the best estimates, from 480,000 to 440,000 B.C. From the Atlantic Ocean to the Aral Sea, most of the scattered European bands of *Homo erectus* people must have been killed by the Mindel freeze.

One or more of the ice sheets, which in many places were as much as 10,000 feet thick, reached as far south as London, Calais and Dresden. But half of Belgium was spared, and virtually all of France. To the south, where the ice sheets did not reach, was vegetation, which meant food—and survival—for men and beasts.

Without the Ice Ages there would have been no civilization, which was the legacy of those who survived the bad times. The great epochs of man grew out of the misery that prevented the reproduction of all but the most resourceful human specimens.

Ice Age Europeans who did not have the vision to prepare for the worst were not our ancestors. They were no one's ancestors! Our forebears were among the chilblained, tenacious characters who anticipated bone-cold winters and were ready for them when they arrived. Some of the near relatives of Heidelberg Man, whose remains were found only 100 miles south of the furthest extension of the ice sheet, must have lived through the 40,000-year Mindel Glaciation.

When we speak of time in terms of generations, it's easy to see there was considerable opportunity for many mutations, good and bad, and the transfer of the many favorable mutations by mating. Quite a few mutations could have occurred in the 1600 generations during which the Mindel Glaciation was sifting out the unfit.

In its article on the "Pleistocene Epoch" the *Encyclopaedia Britannica* states:

> The skeletal parts show that marked evolution took place during the 1,000,000-year stretch of Pleistocene times, particularly in the brain, which increased greatly in size. The artifacts show a gradual progressive increase in perfection and adaptability, which in turn record an increase in intelligence and skill among the people who made them.

It would be unreasonable to expect, however, that in the temperate climate of the interglacial periods the evolution of mankind would be as rapid as in the trying times of the glacial deep freeze. We could not expect that the 200,000 years of the Mindel-Riss Interglaciation would be as effective in creating a race of problem solvers as the 40,000 years of the Mindel Glaciation or the 50,000 years of the subsequent Riss Glaciation.

It is true that most of the artifacts and fossils we have found belong to the interglacial epochs. The reason is simple. The mutations that maintained life in the fierce winters that preceded the interglacials were readily available to meet and solve the lesser problems of the temperate era.

Also a long stretch of relatively comfortable conditions must have been a time of proliferation because birthrates would have exceeded death rates. There were many more tribesmen to work up the artifacts and leave them for our archaeologists to find. More men would be born, more men would die, and more bones would be fossilized.

Dating from the first part of the 200,000-year Mindel-Riss Interglaciation are flints, hand axes, scrapers and borers. There is evidence of life in caves, of fire and of burial of the dead. It requires a higher form of intelligence to create these things, an intelligence made possible by the culling effects of the Mindel Glaciation.

The Mindel-Riss Interglaciation was the beginning of paleolithic times; "paleo" meaning early, "lithic" pertain-

ing to stone. Another name for the period is the Old Stone Age. By the degree of refinement of the stone tools in use it is distinguished from neolithic times—the New Stone Age.

The population of *Homo erectus* in Europe must have been thinned to almost zero by the Mindel Glaciation. Only the few who boasted an almost *Homo sapiens* intelligence could have survived.

But after the murderous siege of Mindel cold came 200,000 years of relatively good weather. In the population proliferation that would have occurred in that sweep of eight thousand generations, the quality of personnel would have certainly deteriorated. It took three more Ice Ages, the Riss Glaciation and Würm I and II, to raise the inventive quality to the level that resulted in the New Stone Age, when tools were made more expertly and in greater variety.

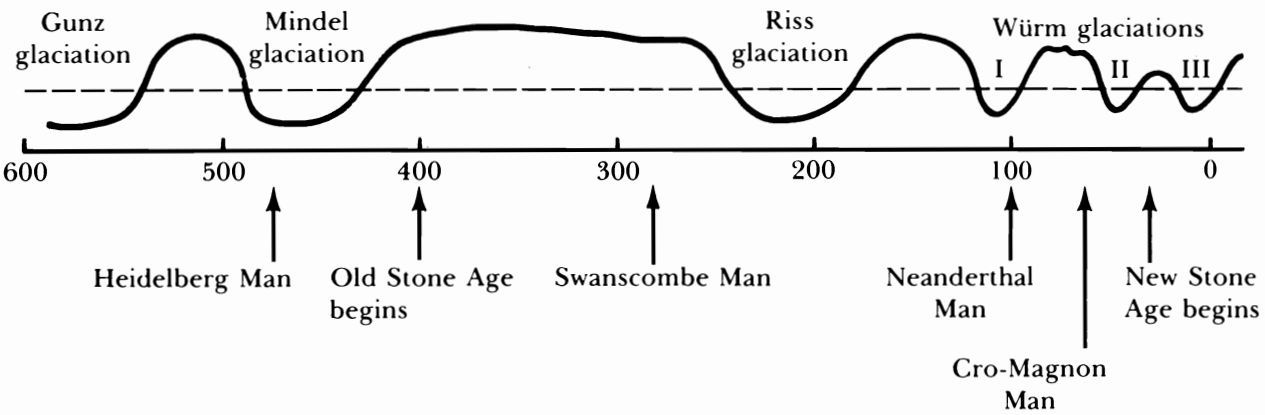
A chart is necessary to illustrate the ancient Ice Age timetable. For the earlier glacial periods I have used the estimates of anthropologists Henri Breuil and Raymond Lantier in *The Men of the Old Stone Age* and W. E. LeGros Clark in *History of the Primates,* though recent geological studies indicate that the earlier glaciations may have taken place even earlier. What is important for our purposes here is not the exact dates but the correlation of the weather with human evolution.

For the latest 140,000 years I have relied on the findings of Dr. Cesare Emiliani, geologist and anthropologist at the School of Marine and Atmospheric Sciences, University of Miami. His study of deep-sea borings and densities of stalagmite and stalactite accretions in caves provides a fairly clear picture of the weather conditions affecting relatively recent human experience.

Australopithecus, as we have seen in an earlier chapter, seems to have attained the *Homo erectus* stage before he left Africa. Then after several thousand years in Asia and Europe, where the winters were sometimes harsh, he discovered and used fire.

RELATIVE DURATION OF GLACIAL AND INTERGLACIAL PERIODS
(in thousands of years B.C.)

The humps are interglacial warm spells; the dips are the glacial periods. Below the dotted line there were thousands of frigid years with much of Europe and America under thick layers of ice.



In Asia at the Choukoutien caves, forty miles southwest of Peking, the site of the bones of persons collectively referred to as Peking Man, the remains of several hearths as well as quartz tools were discovered. Bones of animals littered the area, together with the fragmented skeletons of several human victims of cannibalism. Apparently one tribe roasted and ate members of another. The brain cases of four victims, according to Carleton Coon, ranged from 1,015 to 1,225 cc. The cannibal feast had apparently taken place when Europe was in the midst of the Mindel-Riss Interglacial—about 360,000 years ago. Peking Man seems to have been of the *Homo erectus* type, possibly *Homo sapiens.*

Fire was used by *Homo erectus* in Europe as far back as 250,000 years ago. The evidence was found in the remains of a hearth at Swanscombe, east of London. Not too far away, at the same level, a skull was unearthed in the gravel of a shelf left by an ancient channel of the Thames. It was a woman's skull and had a brain capacity of about 1,300 cc.

Another *Homo erectus* fossil is a jawbone, the only evidence of so-called Heidelberg Man. It was unearthed in Germany, six miles southeast of Heidelberg. Heidelberg Man lived earlier than Swanscombe or Peking Man. Steinheim Man, represented by another skull in Germany, lived later than Heidelberg Man. Steinheim Man is really a woman, with a brain case of about 1,150 cc. Belonging to the same human species are some fossils discovered at Ternefine, about a dozen miles from Mascara in Northern Algeria.

In some phases of the Ice Ages, when the thickening ice sheets absorbed much of the ocean's evaporation, the water level of the seas, including the Mediterranean, sank so low it was possible to *walk* most of the way from Italy to Africa.

Homo erectus, both in Europe and Africa, had tools, but they were not always made of stone, which means such terms as paleolithic and neolithic are slightly misleading.

It is quite probable that every man or ape who had stone and flint tools, including weapons, also had tools made of wood, bone, antler, bamboo and shell, when and as those materials were at hand. These easily shaped artifacts are not often found, perhaps because they are much less enduring than stone.

Prior to the Würm glaciation, perhaps as long as 200,000 years ago, there arrived in Europe a distinctive branch of *Homo sapiens*—the Neanderthals. They acquired their name from the Neander Valley in Germany, near Düsseldorf, where in 1856 a fossilized skullcap was discovered. Since then scores of Neanderthal remains have been found in various parts of Eurasia, most of them in France.

Neanderthals are presumably the descendants of China's *Homo erectus,* who developed almost to the Neanderthal stage in Asia. Carleton Coon writes that they had "Inca" bones in their skulls—small bones where the right and left parietal plates converge with the occipital. The Inca bones are usual in Mongoloids, in both Asia and the Americas. Coon thinks of Neanderthals as Caucasoids, and very likely they picked up their Caucasian traits from captured women in centuries of their westward migration.

Most of their "humanization" probably took place in some frost-bitten pocket south of the ice sheets. Their European territory may have been only a couple of ridges away from the birthplace of Cro-Magnon Man. Perhaps the Neanderthals found it necessary to resume their westward trek when the proliferating and more intelligent Caucasian Cro-Magnons, needing more caves and meat, made life dangerously insecure for them.

The isolation required for the fixation of a mutation, or for the dozen or more mutations, which furnish the identifying characteristics of a group, is a recognized part of evolution. This isolation, sometimes called the pocket principle, must have been experienced not only by the Neanderthals but also by their replacements, the Cro-Magnons. Only if a group is separated from other groups for many

generations does an individual trait become a tribal trait. As a result of isolation, the mutation can be transmitted by the mating process to a larger and larger proportion of the tribe or hunting band. Eventually, after many generations, every tribesman is a direct descendant of the single individual who first had the mutation. Since one individual can be a direct descendant of many individuals, several mutations from different individuals can be transmitted throughout the tribe. Later, a tribe may expand into a race, which then becomes both the guardian and receptacle of the gene pool.

After mutations favoring intelligence have become general among a tribe, it expands into a clan or system of tribes. A beneficial mutation might then be established in all the tribes by intermating. But in general the special characteristics of larger groups were fixed in the isolation period of the parent tribe.

The Neanderthals had been in Western Europe for some thousands of years. They survived the horrors of the first Würm Glaciation, and enjoyed pleasant weather from approximately 95,000 to 65,000 B.C. "Enjoyed" is perhaps not the right word. Most likely they took the pleasant weather for granted, as we do. All 30,000 years of it! Then they disappeared, perhaps after a series of confrontations with the Cro-Magnons.

A major concern for tribal man for thousands of years was rivalry with other primates, including those who were evolving into the hominid stage. Tribes and hunting bands competed for the same hunting and fishing spots and for berries and nuts from the same berry patches and groves. Conflict was frequent. Over the millennia, tribe after tribe was wiped out. In some conflicts women were captured and became the property of the conquerors.

Culture transfer is the taking over by one group of the practices and artifacts of another group. The capture of

women stimulated culture borrowing and, additionally, had an important genetic effect. In periods when the physical environment was adverse, if the heredity of the captive females was not adaptable to the heredity of their captors, their offspring would have a higher early death rate than the average child. If the captured woman introduced a beneficial trait, their children would inherit it, and in a number of generations it became a common characteristic of the adopting tribe. It is this kind of heredity transfer that consolidated so many beneficial traits in a single species.

The Neanderthals appear to have had, in the size of their brains, a good physical basis for intelligence. But though Neanderthal brains were large, Cro-Magnon brains were larger. The *Encyclopaedia Britannica* gives the sizes of their brain cases as 1,550 to 1,750 cc. in comparison with modern man's average 1,400 cc.

When we mention brain size we automatically correlate it with intelligence. Since consciousness is in the brain, since thought processes are in the brain, since memory is in the brain, we can justify such a correlation though it is not a trustworthy test for each individual.

James J. Jenkins and Donald C. Paterson edited and authored a widely read book entitled *Studies in Individual Differences,* in which Paterson denies that brain size is an indicator of intelligence. In fact, he calls the idea "phrenology." But phrenology is or rather was a practice which attributed mental characteristics to prominent skull *areas.* Although, as Penfield and others have shown, behavior functions are related to specific brain areas, they are not predictably reported by head bumps, and the phrenologists' head charts had them in the wrong places anyway. So phrenology has been universally rejected. To classify anything in phrenological terms is to condemn it from the start.

That general intelligence is proportional to brain size is the kind of truth which "crushed to earth will rise again."

In 1906 Karl Pearson measured the heads of several thousand twelve-year-old youngsters and 1,010 Cambridge University students and correlated the measurements with teacher reports and scholastic grades. He found a positive relationship of head size to grades and teacher appraisals of achievement, though the coefficients were small.

PEARSON'S CORRELATION OF HEAD SIZE AND INTELLIGENCE

	1011 Cambridge Students	*2290 Boys Age 12*	*2165 Girls Age 12*
For Length of Heads	+.11 ± .02	+.14 ± .01	+.08 ± .01
For Width of Heads	+.10 ± .02	+.11 ± .01	+.11 ± .01
For Height of Heads		+.07 ± .01	+.06 ± .01

Pearson wrote that because of the small coefficients, "It is impossible to use head size as a basis for judgment as to intelligence." Leona E. Tyler in *The Psychology of Human Differences* (pp. 421–22) agreed. If these psychologists were using head sizes for comparisons of individual intelligence, their conclusion was justified. We cannot expect the correlation of brain volume with intelligence to be close, because the size of our thinking apparatus is not the only factor affecting intelligence. How much body the brain has to service must also be considered. Another variable is the folded-in convolutions of the cerebral cortex, which is the outer layer of brain. The recessed portions of the convolutions increase the total surface, so a smaller brain with many convolutions is equivalent to a larger brain with fewer convolutions.

The Mankind Quarterly (April–June 1972) has a study by Bertil Lundman entitled "Anthropological, Sociological and Psychological Investigations of Swedish School Children." Approximately 1,100 students, mostly eleven-year-olds, were studied in Uppsala. Head size was one of the measurements:

LUNDMAN'S CORRELATION OF HEAD SIZE AND INTELLIGENCE

	Average Head Size (length plus width) in millimeters
Boys in the Upper School	331.5
Boys in the Common School	329.7
Boys in Remedial Classes	327.3
Girls in the Upper School	326.0
Girls in the Common School	322.9
Girls in the Remedial Classes	314.1

The above figures should give the Pattersons, Pearsons and Tylers cause to reevaluate some of their statements about the unimportance of head size.

Evolutionists, as they study fossils in tracing the development of animal life, give a great deal of attention to skull measurements. John Roddam in *The Changing Mind* (p. 90) states, "Mammals differ from other animals mainly in two ways: in the care of their young and the size of their brains." Later he says mammals "have large skulls capable of housing out-size brains."

Nathaniel Weyl and Stefan T. Possony in *The Geography of Intellect* (p. 57) assert "that brain growth parallels the development of intelligence in childhood, and that by the time mental growth has been completed, brain growth has also stopped." They quote David Wechsler, who designed the Wechsler-Bellvue Intelligence Scale: "It is to be noted that 'heavy' brains have generally been those of men of genius and there would seem to be some correlation, though not a great one, between size of brain and mental capacity."

In *The Mankind Quarterly* (April–June 1971) Weyl writes: "Throughout the animal world there is a positive association between the mental ability of a species and its brain-weight to body-weight ratio. We find a similar progression in the various anthropoid apes, pre-hominids, hominids

and *Homo erectus* and *Homo sapiens* types to Cro-Magnon Man."

Brain capacity is the major consideration for judging whether or not a fossil specimen is to be classified as *Homo sapiens,* although as Coon points out in *The Origin of Races* (p. 341), "The designation of a fossil skull as *erectus* or *sapiens* depends on the total configuration, not on brain size alone." Ernst Mayr in *Animal Species and Evolution* (p. 650) remarks, "The most astonishing phenomenon of human evolution is the rapid increase in brain size during the Pleistocene." Clarence W. Young and G. Ledyard Stebbins conclude in *The Human Organism and the World of Life* (p. 843), "The gradual increase in the size of the brain . . . accompanied the trend toward greater intelligence, the most important feature of human evolution." Says Norman J. Berrill in *Man's Emerging Mind* (p. 70), "In a general way we can say that the brain volume doubled during the ten million years or so of man-ape evolution . . . and that it has on the average doubled again during the last million years."

About 15,000 generations after mankind came in contact with the cold, there were enough favorable mutations and enough premature deaths of individuals with unfavorable mutations to produce a Cro-Magnon people. In them evolution reached a peak. No men have ever had larger brains. Alfred L. Kroeber, author of a *Roster of Civilizations and Culture,* reports the skull capacities of seven Cro-Magnon males as 1,500 to 1,800 cc., with an average of 1,600 cc. In *Anthropology* (pp. 27–28) Kroeber estimated brains of the Cro-Magnon people to be "fifteen to twenty percent greater than modern Europeans."

The array of tools, utensils and art objects used, and mostly invented, by Cro-Magnon Man is evidence of high intelligence. They had arrows, spears, harpoons with multiple barbs, stone axes, stone lamps which burned animal fat, flint knives, awls, needles with eyes, woven baskets and carvings on reindeer antlers and ivory.

Most remarkable are the paintings of wild animals on the walls of caves at Font de Gaume, at Les Eyzies, at Lascaux near Montignac and at Altamira near Santander on the north coast of Spain. The *Encyclopaedia Britannica* affirms that "these artistic achievements show a sensitivity of observation, a technical ability and a creative consciousness which prove Cro-Magnon Man to have been a highly evolved human being, both physically and mentally."

Marie E. P. Konig in an article entitled "Ethnological Analogies" in *Mankind Quarterly* (January–March, 1971) interprets the cave drawings as having a philosophical content. The bulls represent, with their horns, three phases of the moon—a symbolic representation seen thousands of years later in Sumerian, Egyptian, Cretan and Grecian art.

An important study in this area is entitled *The Roots of Civilization* by Alexander Marshack, who seems to have opened a door to a new perspective of the Cro-Magnon era. Studying Ice Age implements of ivory, antlers, stone and bone with a microscope, Marshack analyzed markings which other scholars had supposed to be merely ornamental. In many instances he found that the engravings on a piece of antler, or an eagle's bone, had been made not at one or two sittings—which would have been consistent with a decorative purpose—but on different days with different implements and distinctive strokes. After five years of investigation, Marshack is convinced that the Cro-Magnon markings were notational; that our ancestors of a thousand generations ago were keeping records of moon phases. This, according to Marshack, was the beginning of astronomy, of time measurement and of written communication. But even then they were building on the cultural achievements of earlier human species.

Chapter 8

The Social Appetite Versus Evolution

Short-run good is too often long-run bad!
Anonymous

"It is quite possible," writes Robert Klark Graham in *The Future of Man* (p. 56), "that the precise turning point in the evolution of humankind—the time when natural selection was weakened until deteriorative influences could predominate over ameliorative ones—occurred *within* the Cro-Magnon peoples."

Some scholars, reluctant to entertain the idea of declining mentality, have clung to the fiction that human intelligence, which reached such a high level in Cro-Magnon times, has remained unchanged ever since. Graham, as far as it is known, is the first to state there has been a decline; that in the brain department we are lesser men than some of our remote forebears.

Although it may grate against commonly held religious ethics, Graham's "ameliorative" influences, which accounted for the Cro-Magnon ascendancy, were poisonous snakes, man-eating tigers, and the extremes of weather which demanded foresight and frugality on the part of those who survived. These influences, hard as they were on individuals, were beneficial to the species.

The usual definition of "ameliorative," almost the oppo-

site of Graham's meaning, has to do with improving the comfort of the individual, and this is how the word is used in the Interstadial Amelioration, which designates the time Europe had pleasant weather and Cro-Magnon Men proliferated. For the species as a whole, however, this amelioration was deterioration.

The Interstadial Amelioration was blessed (or shall we say cursed) with 25,000 years of tolerable weather from about 53,000 to 28,000 B.C. The cool days and nights were not too uncomfortable for individuals, and could be considered a vast improvement over the zero weather that came before and after. For the species it stimulated a population explosion. But for the quality of the species those good years were bad, because the sorting out process of evolution slackened. Many who would have been eliminated before reaching puberty in the Ice Ages continued to live and reproduce.

Robert Klark Graham was not thinking of "the greatest good for the greatest number" when discussing the Cro-Magnon people. He was referring to the quality of the species when he defined as "deteriorative" the comfortable environment that saved the weak. To produce the Cro-Magnon brain required a cruel and continuing selection process that lasted over tens of thousands of years. Cro-Magnon Man must have rejoiced at the Interstadial Amelioration. But how could he have known that by keeping the less fit alive for reproduction the new era of comfort would lower his descendants' level of intelligence?

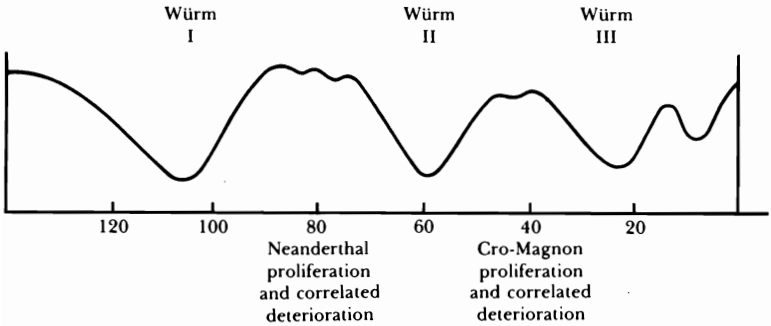
It so happens that 25,000 years of the Interstadial Amelioration constituted the Cro-Magnon era, when the Aurignacian and Solutrean cultures prevailed. The pleasant weather protected about a thousand generations of Cro-Magnons. When they first entered Europe, they must have conquered the Neanderthals in about 100 years or about four generations. Since Europe was a region of abundance, they seem to have enjoyed economic prosperity almost from the beginning.

During the Cro-Magnon heyday, evolution's weeding-out process must have become practically inoperative, as it has in our own time. With the less capable families having the most offspring, there was a gradual and insidious deterioration.

We can visualize the rise and fall of Neanderthal and Cro-Magnon Man in the Ice Ages with the following graph.

THE EFFECT OF WEATHER ON RECENT HUMAN EVOLUTION
(in thousands of years B.C.)

The humps are interglacial warm spells; the dips are the glacial periods.



Our interpretation of the past leans heavily on the proposition that deterioration accompanies proliferation, not only for the prehistoric Cro-Magnons but for all historic peoples and societies. Here is a thumbnail summary of the supporting evidence:

1. Evolution tends to eliminate inefficient individuals in somewhat greater proportion than efficient individuals.
2. A considerable increase in an area's human population signals a more sparing application of evolution's winnowing process, due, for instance, to improved shelter or clothing, or better food storage methods.
3. When a group proliferates, the survivors include individuals further down the scale of efficiency.

4. When a group increases at a faster rate than usual, then it has fewer early deaths per thousand births than usual, and there is less weeding out than usual.
5. Since births are normally more numerous among the less efficient half of any specific group, there is a larger proportion of survivals among the less efficient half when the group increases in number.

All the above statements add up to what can be defined as the law of population dynamics. It is operative wherever prosperity reduces the severity of evolution, wherever the division of labor is complicated enough to obscure the part that incompetent men play in production. Prosperity, which has become the dream of most statesmen and most citizens, promotes more generosity on the part of those who produce more, while camouflaging the inefficiency of the nonproducers.

The law of population dynamics was at work even in prehistoric times. The brain power of the Cro-Magnons, combined with the abundance of food and the pleasant weather, makes it almost a certainty that birthrates increased and deathrates decreased—and the less effective half of the population did more than half of the reproducing.

Among any species, the direction of evolution is in most cases towards greater intelligence, since this usually leads to decisions which help assure individual survival. The mammals have outdistanced other species in the development of intelligence. The primates have outdistanced other mammals. *Homo sapiens* has outdistanced other primates.

In most of its results, evolution usually meets with our approval. We applaud the increased capability of various species, including our own, to adapt to their environments. In comparison with evolution's other products, we have the forgivable habit of liking ourselves best. But ordinarily we give little thought to how evolution works. The *modus ope-*

randi might be called "selective victimization," which can be illustrated by the story of the dogs that Spanish sailors left on a barren island populated by hardy native goats. Only the fastest dogs managed to catch the slowest goats, so the slow dogs died of starvation. Relentlessly and inevitably, the average speed of goats *and* dogs increased with each generation.

There are less stern methods of evolution, such as males selecting females for beauty, and vice versa, and in some species aggressiveness or endurance have their effect on reproduction.

Our social instincts are the inherent cause of our efforts to prevent or postpone death. Since we don't have any fixed standards as to exactly who are to be guarded for survival, the unintelligent and incompetent are saved along with their opposites. The former, having few goals or purposes in life, then "let nature take its course." Is it any wonder they have higher than average birthrates?

Biological change continues, but the trend toward greater intelligence is reversed. The social appetite has worked against evolution.

All of us probably have Cro-Magnon ancestors, both the geniuses who first lifted us up and the dunces who later pulled us down. Fortunately, evolution had its later innings and brought us part way back up the trail. Now we are on the way down again, as the statistics in Chapter 12 will show.

Brilliant men may not know enough to be wise. Cro-Magnon excellence was sabotaged by Cro-Magnon ignorance. We, "the heirs of all the ages, in the foremost files of time," could have had a much richer legacy of brain power if our Cro-Magnon ancestors had realized that the failures they kept alive by their charity would have a deleterious effect on the intelligence of their descendants. As trustees for posterity they failed. Other trustees between their time and ours have also failed. And we are also failing

as trustees for our children's children. Motivated by the same social impulses that deceived our ancestors 50,000 years ago, we are traveling the same path they followed, still giving no real thought to raising the intelligence level of our descendants. Unless we change our habits, we too shall leave to future generations more of our second-rate than our first-rate genes. As Dan Bennett says, "History repeats because people weren't listening the first time."

While we are using our wide-focus lens on history we should observe an interesting parallel between the law of population dynamics and the second law of thermodynamics. But first let's summarize the law again, this time from the perspective of our social instincts.

(1) The social appetite fosters cooperation.
(2) The cooperation may be intricate and intense enough to constitute a civilization.
(3) The division of labor obscures the importance or uselessness of individuals in their various roles.
(4) Some individuals are lacking in the ability to participate usefully in production processes.
(5) The inability may be physical and/or mental.
(6) The social appetite of the capable permits the incapable to share in the "gross national product."
(7) When the civilization is young, the burden of sharing is not heavy.
(8) Those who have relatively few interests and relatively few feelings of responsibility are likely to have less control of their instincts and will consequently have more offspring.
(9) The increasing death rate of capable human beings in a declining civilization is a type of functional disorder.
(10) The preponderance of the less adequate over the more adequate will eventually interfere with the basic procedures and processes of civilization to a point where it will cease to function.

In *Physics from the Ground Up* by Carr and Weidner (p. 228), the Second Law of Thermodynamics is described as follows:

> Any isolated system free to do so will always pass from a more ordered state to a less ordered state until it eventually reaches and remains in the state of maximum possible disorder, which is the state of thermal equilibrium.

Expressed in terms of the Second Law of Thermodynamics, civilization is an "isolated system." When the evolutionary process fails to maintain the necessary intelligence level, the system will "pass from a more ordered state" as the less intelligent people become a larger proportion of the population. Finally the system disintegrates and "eventually reaches and remains in the state of maximum possible disorder."

To tie the Second Law of Thermodynamics into history, if we go back to Europe's warm years from about 98,000 to 68,000 B.C., we will find the Neanderthal people living in a climatic Eden. In the preceding glaciation, they had developed a high aptitude for problem-solving. Now as vegetation and game became abundant, Europe became a happy hunting ground.

Since hunting in those days was conducted in teams or bands, we know that among the Neanderthal people group effort was the rule, not the exception. The social appetite manifested itself everywhere. Neanderthal weaklings were given the greatest care and the death rate was relatively low. And while all this was going on, Neanderthals multiplied and spread to all parts of Europe. In fact, their remains have been found as far away as Palestine.

The Neanderthals must have been rather prosperous, at least in the early stages of their 30,000 "fat" years, as attested by the complexity, efficiency and number of their tools. Nevertheless, the genetic damage that occurred during these 1,200 generations must have been consider-

able. Even with the new selection triggered by the Würm II Glaciation, the later Neanderthals, who unknowingly awaited the Cro-Magnon invaders, were not the men their forebears were.

There is more in Carroll L. Riley's remark in *The Origin of Civilization* (p. 13) than meets a casual reading. "The first Neanderthal men," he writes, "were somewhat more 'modern' than later 'classic' Neanderthals." That's a more restrained way of saying that the Neanderthals attacked by the early Cro-Magnon intruders were the "bottom-of-the-barrel" leavings of 1,200 generations of men who had escaped the selective process imposed by a hostile environment. Men had not learned how to withstand the softness that comes with prosperity. They still haven't learned how.

Though Cro-Magnons averaged the biggest brains in proportion to body size of all peoples, they never produced what we would call civilization. In fact, since all of the civilizations known to us appeared long after the Cro-Magnon decline, we might well ask why have Cro-Magnon achievements—aside from their great cave art—been so insignificant in comparison with those of later people? One answer is that in any civilization the most spectacular achievements come long after the "IQ" of a civilization has passed its peak.

Civilization is an *accumulation* of improvements. The hafted stone ax is an advance over a hand ax. A metal ax is more efficient than a stone ax. A saw is still more efficient. And though there is not much continuity between civilizations, there is generally some carry over from one to another, no matter how far apart they may be in space and time. We build on what has gone before and we feel smug about our accomplishments. We need a reminder of the proverb, "A dwarf on a giant's shoulders sees the farther of the two." The Cro-Magnon people were the first giants.

Another reason why the more notable achievements of a civilization follow a decline in average intelligence is that brain power is unevenly distributed. The higher-than-aver-

age birthrate of the people of less-than-average brains does not prevent the birth of an occasional genius. A few wise men, as long as there is some communication, organization, order and prosperity, can insure the continuation of those aspects of civilization which arouse admiration even while the incompetents are having a field day.

A third reason why a civilization flowers after it has already started to wilt is that, though the more ordinary requirements for citizen comfort keep the achievers busy in the early period of civilization, once the cultural patterns are institutionalized inertia takes over and allows ideas that require a long and uninterrupted period of incubation a chance to hatch. The organized routines of society protect both the incompetent and the innovators, so that the problem-solvers are able to take on projects like the pyramids or moon flights. The great brains of the latter days of a civilization, although they may be fewer in number and even smaller in size than those of the founding fathers, can perform their miracles because they are freed from the less spectacular but more difficult task of putting the civilization together.

If the duration of the Interstadial Amelioration was 25,000 years, at least through half of that period, say 500 generations, Cro-Magnon intelligence would have declined considerably. During this time Cro-Magnon culture could have been maintained at a fairly high level, even though the biological foundations for intelligence were deteriorating.

Eventually, however, would come the punishment for the double sin of permitting a population explosion while having no effective substitute for the now dormant evolutionary process. The great wild herds of elephant and rhinoceros dwindled and the aurochs and wild horses became vanishing species. Hunger descended on the land, perhaps a hunger as great as in present-day Calcutta.

The food scarcity developed many centuries after the Cro-Magnon culture had peaked. With many more mouths

to feed, men used the skills their ancestors had taught them to augment the dwindling meat supply. But by this time not enough Cro-Magnons had the analytical ability to find the larger sources of food needed for the larger number of people—and the brains needed to provide the social organization for a more divergent and less self-reliant population.

At this point we might recall that in our own civilization only two decades ago city officials were boasting about how many new factories and how many thousands of people they were luring into their municipalities. Even now an occasional newspaper writer or chamber of commerce booster will advocate overloading their city's already strained facilities with huge new housing developments.

Cro-Magnon leaders in the time of their "ameliorated" conditions were probably just as nearsighted. Though they probably had more brains than our own politicians and statesmen, their sources of information and knowledge were more limited.

Both they and we have followed similar patterns of environmental mayhem. We both exterminated or nearly exterminated several animal species. The Cro-Magnons killed off all the European mammoths and elephants, and we have almost eliminated the still larger blue whales. Cro-Magnons spread their destruction over many thousands of years. We are doing a more thorough job of it much faster!

At some stage of Cro-Magnon proliferation and decline one or more of the tribes which had their home base near the sea increased their dependence on seafood. In hundreds, perhaps thousands of years, they were responsible for piling up the "kitchen middens," the vast shell heaps at which our archaeologists gaze in astonishment.

Then came the icy gloom of Würm's final blasts, lasting from about 26,000 to 16,000 B.C. Very likely the ten millennia of glaciation and the sudden return of arctic weather about 10,000 B.C. cut the European living standard down to a bare survival level. Only the best genetic stock

managed to muddle through, while almost all the rest died of starvation or cold. When good weather returned, the survivors were ready to invent and adapt to new ways of living; ready for agriculture and animal husbandry; ready for the mining and refining of metals.

Then, as amateur farmers learned how to make two stalks of wheat grow where one had grown in the wilds, there was another age of proliferation accompanied by deterioration. Robert Klark Graham explains (p. 57):

> We know that brain size and intelligence tended to increase under the severe natural selection which food-gathering and hunting imposed. We know that the increase apparently ceased with the advent of mixed agriculture. It is not difficult to see why this should have occurred, for food production permitted millions with lesser brains to survive who would not have qualified for survival under the more rigorous selection of the hunting stage.

By the end of the last Ice Age, some 8,000 years ago, dogs, sheep, goats and cattle had been domesticated; wheat and barley added to the food supply; boats built and fish nets invented. Someone discovered the wheel, which may have first been used horizontally in the making of pottery. But the new knowledge spread slowly and many of these great inventions would not be widely known for hundreds, even thousands of years. Where geographic conditions were favorable, the news traveled faster.

A smooth, chronological continuity in the story of human advancement has not yet been established, but the archaeologists are trying hard. Colin Renfrew, who has specialized in the dating of prehistoric objects by the Carbon-14 method, found that copper metallurgy was common in Greece at a much earlier date than had previously been supposed (*Scientific American,* Oct. 1971). Discovering that Balkan villages had been in existence 1,000 years earlier than those in "ancient" Asia Minor, he decided: "The cen-

tral moral is inescapable. In the past we have completely undervalued the originality and creativity of the inhabitants of prehistoric Europe."

But since much more is still known about the early achievements of man in the Middle East, it is there we must turn our attention.

The Caspian Sea, although drying up, is still the biggest lake in the world, having five times the area and more than twice the depth of Lake Superior. It has no outlet and is now nearly a hundred feet below sea level. But over the thousands of years that glacial ice was melting in Northern Europe, the Volga, Ural and Kura rivers made the Caspian Sea much bigger than it is now. Carleton Coon found many seal bones in Belt Cave, a Caspian site inhabited by humans 11,500 years ago. At 6,500 B.C. their favorite dish was gazelle. By 5,800 B.C. the inhabitants had domesticated goats and sheep. At approximately 5,300 B.C. Belt Cave occupants began to make pottery and added pork and grain to their diet. It is still undetermined whether the grain was wild or was planted by man.

Among the earliest of towns was Jericho in Jordan. Andrew Thomas says in *We Are Not The First* (p. 40): "The famous Jericho skulls, filled in with clay and shell, depict exquisite Egyptian-like faces. They have been dated to about 6,500 B.C., which is roughly some 1,500 years before the beginning of Egyptian civilization."

Other early towns were Jarmo, in northern Iraq, and what is now called Chatal Hüyük, in Anatolia. Hüyük means mound, a wart on the landscape which signals the remains of a long-departed town or city. The Chatal mound, 50 feet high, is at an elevation of 3,000 feet. Nearby, across an ancient river bed, is a more recent mound, 20 feet high.

Chatal, 8,000 years ago, was a bustling town, about a third of a mile long, occupying 32 acres, only one of which has been excavated. The town consisted of twelve layers, the bottom one going back 8,350 years, the top 7,600 years. The houses were built of sun-dried mud bricks, which were

made with straw in wooden molds and were of different sizes in the different levels. They were bigger than our bricks, many over two feet long, and were set in a board frame of squared timbers, with mortar made of ashes and bones. Squared timbers were used as roof beams.

The town was compact, the buildings being placed side by side. The general appearance was not unlike the Pueblo dwellings at Taos, New Mexico. Buildings were of different heights and light entered through openings near the roof. At night, illumination was provided by stone lamps.

There were no doors, inside or out. The entrance was a hole in the roof, which was somehow protected against the rain. The hole was reached by ladders and the inside ladder was fixed permanently to the south wall. Inside, a few inches above the floor, were openings in the walls for passage between rooms.

The roofs consisted of bundles of large reeds laid on the supporting timbers and amply covered with earth. The walls were plastered, some of them a hundred times.

Furniture and decorations were built in. Hearths were raised and had curbs to retain the ashes. Ovens were partly projected into the walls. Smoke went out the same hole in the roof that was used as the entrance. Sleeping platforms were constructed of earth.

A typical room was ten by thirteen feet, but some were twice that size. A typical house had five rooms, the kitchen being the largest. There were sleeping platforms for five people and rooms for storage, especially for grain, with bins about a yard high. More storage space was provided by coil baskets and containers made of animal skins. There were carbonized remains of wheat, barley, peas and vetch.

Some rooms may have served as shrines and even burial places. The former were found in what were apparently the homes of priests. They had sleeping platforms and benches, as did the living rooms of other homes. But the shrine rooms had abundant wall paintings, baked clay re-

liefs and sculptures. Various animals were represented, but most of the sculptures were bull's heads.

Human remains in Chatal burials were wrapped in cloth, which, woven about 8,000 years ago, could have been the earliest ever manufactured. We have not yet learned what sort of weaving frames were used.

The range of colors in the paints is remarkable, and may have involved the earliest use of minerals. The green and the bright blue probably came from malachite and azurite, which are carbonates of copper. Iron oxides and, less frequently, mercury oxide supplied the basis for the red shades. Cinnabar, a mercury sulfide, yielded vermillion. Manganese made a paint of silvery white and galena, a lead ore, was used for gray. In one instance pounded mica was mixed with purple paint to make it sparkle.

The Chatal people seem to have had a mania for paint. Whenever there was any excuse for it, they covered their walls with white plaster, which they seem to have taken from a dry lake bed. Any wall which stood for seventy years or so would have nearly a hundred coats of plaster. Baked clay figures of animals might also have as many as a hundred coats of paint. Paint was also applied to plaster reliefs, skeletons, wooden boxes, rush baskets, pottery and ladies' eyebrows.

Some of the wall paintings are geometric figures in repetitive patterns, remarkable in their intricacy and color combinations. The designs are not too different from those in modern Turkish rugs. Other paintings are replete with circles, stylized flowers, stars, hunting scenes, birds, bulls, leopards, foxes, weasels, stags, rams, boars, human beings and landscapes. Brush strokes indicate a variety of paint brushes, some very fine.

The artifacts in Chatal would stock a department store—wooden trays, bowls, cups, forks, spoons and carved wooden boxes with closely fitted covers. Some of the implements are made of imported flint, more of carved bone, and

many of polished green obsidian (volcanic glass). Ladles and spatulas for spreading plaster are of bone, as are the sewing needles. Pins are of wood or bone. There are arrow heads, spearheads and a few sickle blades of obsidian. There are hooks and eyes and belt toggles of bone for clothing. There are stamp seals of baked clay, which could have been used for stamping designs on cloth. Several female graves contain obsidian mirrors.

Both sexes wore jewelry. Necklaces, bracelets, armlets, anklets, amulets and pendants are fabricated of stone, shell, clay, bone, animal teeth, copper and lead. Some bracelets are of marble, alabaster and white gypsum.

A few of the statuettes are of marble, though most are of baked clay. Statuettes of a regal-looking boy and several versions of a corpulent woman seem to have a religious connotation. The latter may have been a fertility goddess.

Although religion played a considerable part in the lives of the Chatal people, nowhere was there any evidence of animal or human sacrifice.

Chatal's defense was served by the solid front provided by the close-packed buildings. Men on the roofs, armed with bows and arrows, spears and with baked clay balls for their slings, would have been difficult to dislodge. There is no evidence that their town was ever attacked, which cannot be said for towns we will examine later.

Chatal came into being, bloomed, matured and lost its vigor. Eventually it died, was buried by the desert sand and forgotten. The last ten of its thirty-two generations appear to have been comparatively uncreative.

Here in miniature we see the rise and fall of a civilization. Can we read its lessons? Chatal can be considered as an early application of the self-destruct principle.

Chatal has not been nominated as the first civilization; merely as one of many places where human beings led organized lives in the centuries closely following the Ice Ages. We can never know the whole story, partly because that general area, as the weather improved, had many hav-

ens where caves were unnecessary and where surface shelters (like many of our modern farmhouses) were too fragile to endure.

One archaeologist has listed sixty-six early towns and villages somewhat similar to Chatal in Anatolia alone. Some of them were so early that they could have had only the most tenuous contact with others. Many, like Chatal, were without ramparts, though by the beginning of recorded history massive protective walls had become usual. Cause and effect were operating in the decline and death of these settlements and in the dozens and perhaps hundreds of civilizations that have preceded and followed them.

Dozens and hundreds? The fact that there have been many—each one traveling the same route to oblivion —ought to arouse some suspicions that something is fundamentally wrong with the pattern they followed; suspicions that we too, who are following the same route, may be doing something with lethal consequences.

The world has seen many more civilizations than those unveiled by Arnold Toynbee in his *Study of History.* If we combine our new knowledge about the number of civilizations that have been extinguished with our new knowledge about the mechanics of genetic deterioration, perhaps we can devise measures to prevent our own civilization from going the way of all previous ones.

Chapter 9

The Fall of Civilizations

It came without a sound,
Without the slightest tone
Of warning to be found,
By which they might have known;

With neither trumpet call
Nor finger beckoning;
With nothing said at all,
Aloud or whispering

To wake their faintest fears,
Except what they had read
Each day for years and years
And had not credited.

Lord Dunsany

Complexity distinguishes all those cultures that have usually been designated as civilizations—even the earlier ones, which were much simpler than our own. A central feature of any civilization is specialization, especially in activities directed to the production of economic goods. Specialization in production allows the accumulation of surpluses which in turn support other forms of specialization, such as music, art, architecture, formal education, amateur and professional sports and religion.

Specialization goes hand in hand with trade, transportation, communication and government. Commerce, a basic

component of civilization, almost always depends on a money system, though some early societies which exchanged goods by barter were complex enough to be designated as civilizations.

Trade requires an effective transportation system. So does communication, one form of which is writing. Printing moves civilization further along, as do voice recordings, microfilming, photography and the electrical transmission and storage of sounds and symbols. Civilization also includes the development of formal education and a political structure.

There are fringe phases of civilization—chivalry, charity, "bread and circuses," welfare, various forms of insurance. Many people think of these as the real substance of civilization. If a person fails to participate in or benefit from some of these marginal institutions, he is likely to be thought of as "uncivilized."

There have been more civilizations than we once imagined, most of them lasting a thousand years or less, then gradually disappearing. Egypt had dark ages of disorganization interspersed with periods of magnificence. The parade of the Sumerian, Babylonian, Assyrian and Chaldean civilizations in the Tigris and Euphrates Valleys followed invasions and infiltrations by outlanders. China's civilizations have been rhythmic in their rise and fall, while that of the Mayas seems to have had one great efflorescence and was then extinguished.

The rhythmic nature of civilization has been a great fascination to historians. As Greece faded and the Roman Republic drifted into dictatorship, the poet Lucretius elaborated on the mortality of nations. Voltaire put the same idea this way: "History is only the patter of silken slippers descending the stairs—to the clatter of hobnail boots coming up."

What Voltaire was saying is that a nation, grown too luxurious, is likely to yield its place in the sun to some

coarse and swashbuckling, but energetic and self-confident newcomer. Nations, he indicated, grow soft as they become successful.

Louis Wallis wrote in *An Examination of Society* that Egypt, Babylonia, Assyria, Phoenicia and Israel gradually succumbed to assaults from without, yielding to Elamites, Kassites, Ethiopians, Scythians, Medes, Persians, Greeks and Romans. "It would seem," said Wallis, "that Oriental Society, having waxed powerful up to a certain stage, ought to have repelled these enemies instead of offering a weaker and weaker front to their assaults. But the contrary was the case; and the genius of progress at length departed from the eastern world."

Those Middle East regions, through all the shabby centuries that followed, acted as if they had forgotten they were once the center of a civilization. After the conquerors listed by Wallis stood successively in the limelight for their brief moment, they joined their victims in history's graveyard. Lord Byron gave his version of this sad time table in *Childe Harold's Pilgrimage:*

> There is the moral of all human tales:
> 'Tis but the same rehearsal of the past,
> First Freedom, and then Glory—when that fails,
> Wealth—Vice—Corruption—Barbarism at last.

The Englishman, Conyers Middleton, made a similar point when discussing the Romans' low opinion of Britain:

> From their railleries of this kind, on the barbarity and misery of our island, one cannot help reflecting on the surprising fate and revolutions of kingdoms; how Rome, once the mistress of the world, the seat of arts, empire, and glory, now lies sunk in sloth, ignorance, and poverty . . . while this remote country, anciently the jest and contempt of the polite Romans, is become the happy seat of liberty, plenty, and letters; flourishing in all the arts and refinements of civil life; yet running, perhaps, the same course which Rome itself had run before it, from virtuous in-

dustry to wealth; from wealth to luxury; from luxury to an impatience of discipline and corruption of morals: till, by a total degeneracy and loss of virtue, being grown ripe for destruction, it falls a prey at last to some hardy oppressor, and, with the loss of liberty, losing everything that is valuable, sinks gradually again into its original barbarism.

When we compare England's present state with her happy genius of, say, 150 years ago, it is easy to imagine a couple in a portrait looking at their own portrait, in the same pose and the same setting. And in that smaller portrait they are looking at themselves in a still smaller portrait —and so on. Similarly Americans can now see America's pattern in England as English scholars saw England's future in Rome's past, and probably as Romans looked back to Greece, Greeks to Crete, and Cretans to Egypt and Sumer.

Britain was still on the upgrade when Byron and Middleton observed that her course might be a repetition of Rome's. By 1900 the British Empire had risen to the pinnacle of world power, with "dominion over palm and pine." Perhaps some crumbs of glory remain for Britain in the future, but there can be no doubt that the high point is past. "History hath but one page," said Byron.

F. L. Lucas strikes a true but pessimistic note in "Beleaguered Cities:"

> Build your houses, built your houses, build your towns,
> Fell the woodland, to a gutter turn the brook,
> Pave the meadows, pave the meadows, pave the downs,
> Plant your bricks and mortar where the grasses shook,
> The wind-swept grasses shook.
>
> Build, build your Babels black against the sky;
> But mark yon small green blade, your stones between,
> The single spy
> Of that uncounted host you have outcast;
> For with their tiny pennons waving green
> They shall storm your streets at last.

Build your houses, build your houses, build your slums,
Drive your drains where once the rabbits used to lurk.
Let their be no song now save the wind that hums
Through the idle wires while dumb men tramp to work,
  Tramp to their idle work.

Silent the siege; none notes it; yet one day
Men from your walls shall watch the woods once more
  Close round their prey.

Build, build the ramparts of your giant town;
Yet they shall crumble to the dust before
  The battering thistle-down.

Eric Fischer, author of *The Passing of the European Age,* writes that a civilization is rarely reborn where an earlier one has died. Even in countries that seem to have had a recurrence of brilliance, the center of the new culture has usually been a new center. Chinese civilizations, Fischer says, had successive centers in the Valley of Wei, along the middle course and lower estuary of the Yangtze Kiang and in China's Northern Plain. In the valley of the Tigris and Euphrates the Sumerian, Akkadian, Assyrian and Chaldean civilizations had different focal points. Even in the long history of Ancient Egypt, the numerous revivals of civilization had different capital cities.

A civilization may be transplanted to new soil, however, and survive while the parent culture declines. Selected features of the old society may be retained and some of the deficiencies discarded. In this manner, Fischer points out, the culture of Greece was transferred to the Hellenistic world—and the culture of Europe to America.

But why does not the cumulative knowledge that comes with experience result in ever greater wisdom and ever better adaptation to new conditions? Louis Wallis worked on that problem by analyzing the effect of concentrated land holdings on morals and morale. But such a limited

study is totally inadequate to explain the fall of all societies, and much too narrow to explain the hazards faced by our own.

Fischer has a somewhat different idea. He tells us that society's creative juices, when they reach their fulfillment, jell and harden. The revolutionary forces, having won their victory, entrench themselves. What is new then becomes disruptive. When utopia turns into a fact no more changes are permitted. Fischer also shows the new centers themselves are a reason for the decline of the old ones. There is a shift in the center of gravity—by which he means a disturbance in the delicate equilibrium of commerce, industry, art and government.

Tom B. Jones in his masterful book *Ancient Civilization* (Chapter 27) advances a comparable analysis. He mentions the completion of a pattern, particularly in trade and industry as one reason for decay. In the Near East, cities traded with the countryside and distant seaports by exporting manufactured commodities and importing raw materials. Greek manufacturers, for example, shipped finished goods to their colonies along the Aegean Sea and imported raw materials. The development of Rome was similar. The end of the chain of classical urban development, according to Jones, occurred when the Roman Empire reached the point of greatest territorial expansion in the second century A.D. Next came a period of economic decentralization as cities developed in the remote settlements. Regression in the center followed. While defensive frontiers and internal disorder demanded military expenditures and high taxes, the opportunities for profits and for an adequate tax base contracted. Gradually the whole economic structure disintegrated.

Another thesis that deserves attention is that of W. C. Lowdermilk, author of the pamphlet *Conquest of the Land Through Seven Thousand Years,* written while he was chief of the U.S. Soil Conservation Service. Lowdermilk concluded

that civilizations die when their supporting agriculture fails. As erosion carries away the soil or silts up the water supply, the social order eventually finds itself in desperate straits. In ancient Mesopotamia, when the public works projects of cleaning out the canals were interrupted by internal revolutions or foreign invaders, the canals were choked with silt, which "depopulated villages and cities more effectively than the slaughter of people by an invading army."

Lowdermilk found the accumulation of silt on a Cyprus plain to a height thirteen feet above the old level of a church floor. He wrote of great Roman cities in North Africa that were completely buried in dust.

He also described erosion in ghost towns in Syria, where the land has been washed away from the buildings, leaving the doorsills three to six feet above the exposed rock. The disappearance of the soil meant the disappearance of food. So the towns became uninhabitable.

Lowdermilk wrote about the silt-laden Yellow River of China, winding forty to fifty feet *above* the farm land on the floor of the valley, its tenuous elevation maintained by bare hands working forever on the dykes. The author followed the silt to its source—the raw hills which for a thousand years had been washing away after man had ravaged the forests that once protected both the hills and the plains below.

Of the people whose food sources were jeopardized by the logging there may have been some, but not enough, who saw the danger. Today only a few of us are uneasy about burning the autumn leaves; about installing a waste disposal sink because it routes organic matter to the sea; about the incineration instead of the composting of garbage; about the Mississippi dumping the "four hundred million tons of top soil into the Gulf of Mexico every year." It takes better than average brains to comprehend the connection between cutting down a brush lot in Ohio and increasing the height of a levee in New Orleans.

Brooks Adams' great book *The Law of Civilization and Decay* was published in 1896. Charles Beard, the noted American historian, spoke of it as one of the outstanding historical documents of modern times.

Before Brooks Adams wrote a word, there had been a vague but widespread assumption in America that history was a one-way street toward better and better conditions. It was believed that whatever *is* is somehow better than whatever *was,* but not so good as the things that are yet to be.

Brooks Adams replaced this beautiful illusion of eternal social progress with the stern fact that earlier civilizations had not only risen but had fallen—mainly, he felt, because of an increasing centralization of power. Adam's thesis is in harmony with Willis J. Ballinger's idea in his book *By Vote of the People* that democracy declines as a consequence of the concentration of economic power.

Concentration of power is synonymous with concentration of decision making. It may reasonably be argued that such concentration is primarily the result of managerial efficiency. But in scattered and parochial decision making a wrong decision is likely to have only a local effect, whereas a wrong decision on the national scale is a hazard to the whole society.

In the five or six thousand years of recorded history, government by the people or by their elected representatives has been a rare and fleeting experience. Relatively few civilized peoples have ever lived under rules of their own making, and it appears that all earlier civilizations eventually diluted the rights of individuals to the vanishing point. With the passing of time our own government has taken over many of the most important decision-making functions of our economy.

About two decades after the publication of Brooks Adams' work, Oswald Spengler, a German schoolteacher, wrote a massive historical study, which in its English edition is called *The Decline of the West.* Spengler likened civiliza-

tion to an organism and compared its stages to the succession of the seasons. In its springtime it is organized around agriculture. By the time of its autumn its energies are largely devoted to industrial production and the building of huge cultural vacuums called world cities. Then comes the winter and it is finished.

Another treatment of the rise and fall of civilizations was undertaken by S. Colum Gilfillan, whose lead poisoning theory will be mentioned later. In an article entitled "The Coldward Course of Progress," *Political Science Quarterly* (September 1920), he concluded that civilizations, as a rule, have successively moved northward. The same theme was later adopted by Ellsworth Huntington and Vilhjlmur Stefansson.

In his *Family and Civilization* Dr. Carle C. Zimmerman has interpreted the decline of civilization to be a result of family disruption. Husbands, wives, sons and daughters become so independent of each other and so far apart in their interests that the family breaks up and with it the civilization. Here we may add to Zimmerman's interesting thesis by observing that the loosening of family ties is due in part to the creation of new institutions which have taken over the family's functions—and these new institutions are themselves attempts to adapt to the growing inadequacy of many families to hold together. Education is only one of the historic social functions that has been removed from the family. Entertainment is another. Economic opportunity for women is now widely available outside the family. Government aid is being substituted for such traditional family responsibilities as care of the sick and the aged.

A century ago general education became too complex and time-consuming for the average parent to handle. Today the same thing is occurring in sex education.

Entertainment or amusement gradually loses out as a family function when commercial enterprises take over, in the form of motion pictures, radio and television. At the

same time much of the context and content of present-day entertainment (and the arts as well) lead to family disintegration.

Recent divorce rates speak eloquently of the family breakup. And the incredible number of murders and acts of violence committed every day cannot be expected to strengthen domestic ties. Neither can the nationwide inundation of pornography.

Of all present-day hazards to family solidarity—and to civilization—television should be put at the top of the list. Alistair Cooke, who has had more than his share of experience in the medium, has no illusions about its net effect to date. Unfortunately, he says, its influence on the development of a child is far greater than that of either school or church.

To be sure, most family functions are still performed, but no longer by the family. The trouble is that many people think these functions are now being performed better elsewhere. Those who learn to depend less on the family come to depreciate it.

The decline of the family is accelerated by the increasing complexity of the social environment, since the government agencies and institutions which are replacing the family have a fragmenting rather than an integrating effect on society as a whole.

A novel theory that bears on the decline of society, as well as civilization, has been propounded by Dr. Joseph Unwin, a British social anthropologist. In a monumental volume entitled *Sex and Culture* he points to a positive correlation between achievement and sexual restraint. When a civilization relinquishes its sexual discipline, Unwin asserts, it loses its "energy," and its accomplishments diminish. The achievements of societies are proportional "to the amount of continence they have suffered."

In today's context, this means that our innate drives for food, sex, attention and so forth can be somewhat appeased by an interest in social achievements. If, however, these

"inner demands" are immediately fulfilled, there is no drive left for social accomplishment.

Unwin defines monogamy as a form of sexual restraint, considering it as the only alternative to the haphazard sexual promiscuity that prevailed in many primitive tribes. He warns us:

> No society and no group within a society, has ever tolerated [monogamy] for long. Every society that has adopted it has either abandoned its monogamy or constantly revised its method of regulating the relations between the sexes; and in the course of this revision—sometimes, it seems, without conscious intent —sexual opportunity has been extended.

Unwin's reason for the fall of civilization boils down to the simple idea that after a nation has become successful it becomes increasingly sexually permissive and as a result loses it cohesion, its momentum and its purpose.

One of the not so obvious causes of our own decline is the rapid and tremendous outpouring of data that no man and no organization can possibility digest. At a recent meeting of the American Association for the Advancement of Science, about 1,500 papers were read. How can anyone begin to keep up with all this information? No matter how important a particular contribution may be, only a very few people are ever likely to read or hear about it. Too many other innovators, as distinguished from bona fide inventors and bona fide artists, are competing with it for public attention.

The number of books printed each year is now passing 60,000. A work which may contain something of first-rate importance is likely to receive only passing notice and may quickly be forgotten. Each year in the United States 55,000 journals are published, containing 1.2 million articles, not to mention millions of research reports. How well-educated can a well-educated man be?

Harold H. Smith used the increasing speed of human travel as a chronicle of cultural change (*Saturday Review*, Jan. 8, 1955). When horses were domesticated over 5,000 years ago, man was able to travel more than twice as fast as he did on foot (from a maximum velocity of 15 mph to 38 mph). For several thousand years this was the speed limit. Then in 1829 a steam locomotive went 44 mph. In 1901 a train went 120 mph. In 1910 automobiles took over, with a speed of 131 mph. In 1939 an airspeed record of 409 mph was set. In 1953 jet-propelled planes went 753 mph in level flight. In 1956 the Bell X-2 reached 2,178 mph. Early in 1959 the X-15 increased this to 4,500 mph. On August 29, 1965, L. Gordon Cooper, Jr., and Charles Conrad, Jr., ended a space journey in which they circled the earth 120 times in less than eight days, having traveled at about 17,500 mph.

Smith pointed out that speed is only an index. The fundamental change has taken place in knowledge—in the technology that is exercising such a profound impact on the environment. The chief item of Smith's concern was the plight of educators whose job it is to give students a broad education in a world of increasing specialization.

According to Smith the biological basis of intelligence has been the same for many thousands of years and is likely to remain so far into the future. The truth is, as our earlier chapters have endeavored to show, man's capacity for problem-solving is not static and undergoes significant changes.

Smith's mistake, however, does not invalidate his main point. "No matter how long or how intensive the schooling," he says, "each generation will know relatively less per individual of the total cultural heritage than the previous generation."

The individual, amid the multiplying inventions and the organizational pyramiding, is confronted with an ever more elaborate array of problems. As torrents of information descend on him, the evaluation of the relative significance

of separate items becomes more and more superficial. Consequently, the typical person has at his command fewer facts with which he can feel at home, while his idea of the outside world becomes impressionistic and often chaotic. His role as a decision-maker is reduced to that of an amoeba in a boundless ocean. He struggles for light and for vision, but generally the educator is the blind leading the blind. The complexity is just too much.

Overpopulation has caused the decline and fall of some civilizations, particularly those extremely dependent on irrigation, as explained by Nathaniel Weyl and Stefan Possony in *The Geography of Intellect* (p. 84). At first, irrigation is constructive and beneficial because it permits far more grain to be grown in a given area than would be possible without it. The ensuing agricultural economy provides enough leisure to develop specialized activities which are the prerequisites of civilization. It can therefore be said that civilization depends on grain surpluses.

Weyl and Possony list among the civilizations most dependent on irrigation: Mesopotamia, beginning about 4,000 B.C.; Egypt, beginning about 3,000 B.C.; the Indus Valley, beginning about 2,500 B.C.; and China, beginning about 1,500 B.C.

But overpopulation can quickly wipe out such surpluses. Once that happens, as Chi Ch'as-ting asserts in *Key Economic Areas in Chinese History,* we have "class struggle and peasant wars breaking down centralized authority." This is what happened in ancient China, and this is probably what happened in Mesopotamia and the Indus Valley, the two other civilizations which Weyl and Possony claim were most dependent on irrigation.

Too many people in a given area have lately been widely recognized as a serious threat to those aspects of our civilization which we treasure most highly. In *Population Roads to Peace or War,* Guy Irving Burch and the author of this study spotted the danger more than three decades ago.

Walter B. Pitkin's foreword and the postscript went well beyond the authors' own Malthusian analysis.

> The consequences of [population expansion] will please no Pollyannas. . . . it is primitive man's nature to breed up to the limit of his food; and most people on earth are still primitive or first cousins to primitives. Even if we were to find new food for the three billions on earth by the year 2000, these citizens would blithely breed and breed and breed until the world held four billions, then five billions, then ten billions. And man, the individual, would at length vanish in his own multitudes. . . .

Interesting, isn't it, that we who knew the score, so grossly underestimated the growth rate. In 1945 Pitkin predicted the horrendous population figure of three billion people by the end of this century. We are already one billion past that and the best present estimate of the number of humans that will overload the earth in that milestone year is more than six billion.

Chapter 10

The Heredity Factor

Disaster built deceptively
Tradition said "O.K."
The people thought the trend was good!
How blandly blind were they!

Anonymous

Let's summarize the various reasons for the fall of civilizations given by the eminent scholars and philosophers mentioned in the previous chapter.

Voltaire: When people become soft, they invite conquest.

Louis Wallis: Concentration of land holdings adversely affects morals and morale.

Eric Fischer: Old cultures become unadaptable to new conditions.

Tom B. Jones: (a) Completion of a pattern, as in architecture or any other field of endeavor, leaves no direction to go but down.

(b) Raw materials are first exported, then used up at home, then imported, until they can no longer be afforded.

W. C. Lowdermilk: When its agriculture fails, the civilization fails.

Brooks Adams: Concentration of power and of decision making mortally wounds the social organization.

Carle C. Zimmerman: When family ties loosen, civilization decays.

J. D. Unwin: Permissive sex mores are anathema to civilized behavior.

Harold H. Smith: Increasing complexity and knowledge have a Tower-of-Babel effect.

W. B. Pitkin: A vast population militates against individual achievement.

Note that none of these gentlemen emphasizes or even mentions heredity. In fact, all of them seem to have gone out of their way to avoid any references whatever to the part human genetics plays in the fall of civilizations.

No one, including the author of this book, claims or suggests that the deterioration of heredity destroys a civilization all by itself. One or more of the causes summarized above certainly enters into the picture, and sometimes disaster strikes quite independently of any heredity change. However, the main thesis of this book is that every civilization normally has a built-in, self-destruct mechanism, which insures that the less capable half of every generation become the parents of more than half of the succeeding generation.

The point is that the most intelligent and the least intelligent people have sharply different attitudes toward childbearing. Reliable statistics show that this attitudinal difference results in the more successful segments of our society having fewer children. Part of this is due to the fact that intelligent couples marry at a later age.

In *Science News Letter* (March 3, 1962), Ann Ewing wrote about "a survey of 31 women who participated in the first

and second Science Talent Search of 1942 and 1943." By 1962 most of these highly intelligent women had attained important positions in science, but "of the 31, 20 were married while 11 remained single." It seems that the influences which stimulate talented women to take up a profession tend at the same time to remove them from the marriage market. In this case thirty-five percent of them were unmarried, compared with about ten percent of the women in the population at large.

Here are some of the reasons why intelligent couples are increasingly unwilling to have a large family, or any family at all:

1. In spite of hard times and inflation, relatively thoughtless couples are likely to marry younger, and then to reproduce with less thought of the future than prudent couples. Sensitivity to the *cost* of raising children is keener among the more affluent members of society, even though they can afford the cost better than the less affluent members.

2. Intelligent couples are more likely to know about birth control and improved methods of contraception than less intelligent couples. Conversely, the less people know about such things, the more babies they have.

3. People of intelligence frequently develop a strong interest in the professions, in the arts, in business, in science, in hobbies or in any number of other activities. Such interests may leave them little time or inclination for children.

4. It is an old cliché that the more there is of something the less it is worth. That may not be the attitude of parents to their own children after they are born, but it is true that the more boys and girls there are at home, the less importance another child will have. Such matters are not likely to be thought about in advance by the unintelligent in connection with childbearing, but may restrict the number of children by the intelligent.

5. Highly intelligent women are usually purposeful.

Adopting the role of men, they disparage their own inborn function as women (womb-men) and leave child-bearing to those of less intelligence.

6. The problem of disciplining children in a permissive age is often foreseen by capable couples, so they have fewer children. Less capable couples discover too late that they are slaves of TV toddlers and tempestuous teenagers who justify the definition of gratitude as "the lively expectation of further favors."

7. In 1949 the British Royal Commission on Population found that high standards of parental care were a reason for the general decline of the British birthrate. Obviously these high standards were honored by the more conscientious, not the less conscientious, Britons.

8. The intelligent parent is quicker to note the prosperity of the small family and the poverty of the large one.

The disproportionate fecundity of less capable mothers was a crucial threat to ancient Rome, particularly after the Republic gave way to the Empire. In *The Women of the Caesars* the noted historian Guglielmo Ferrero wrote: "that glorious Roman aristocracy which had escaped the massacres of the proscriptions and of Philippi, ran grave danger of dying out through a species of slow suicide. . . ." Among a variety of social laws which the emperor Augustus had enacted in 18 B.C. to correct this evil was the *lex de maritandis ordinibus* which attempted by rewards and penalties to force aristocrats to marry and have offspring. Deeply disturbed by the increasing incidence of celibacy and small families, Augustus fixed at three the number of children which every citizen should have "if he wished to discharge his whole duty toward the state." But some got around the injunction by adoption, an increasingly common process. The aristocracy and the better class of citizens were becoming "less numerous, less prolific, less virtuous."

Tenny Frank very definitely asserted that the heredity factor was the key reason for the decline of Rome. Admit-

ting that the old Romans had all but disappeared, he wrote in his *History of Rome* (p. 567), "The original peoples were wasted in wars and scattered in migrations and colonization and their places were filled chiefly by Eastern slaves.

Charles Deming, an expert on demography who lives in Los Angeles, has a more widely applicable genetic theory that stresses the tragedy of replacement of farsighted creative founders with irresponsible recruits. He wrote in a letter to the author:

> [T]here is something regular in these early civilizations . . . the timing is remarkably similar. . . . The growing city would attract the attention of other people who had not built a city; it would be seen like a mountain in the desert. Many of these people would migrate to the city. As they continued to do so, of course, the talents that would establish a city would soon be diluted and then be subordinated . . . The city civilization would have to go down. The fall therefore would be due to something very akin to that perhaps unkind word 'degeneracy.'

Tenny Frank's mention that early Romans were wasted in wars requires some qualification. From the genetic standpoint it is possible some wars can have a beneficial result. The Thirty Years War in Germany may have eliminated many Germans who were incapable of planning for the worst. On the other hand, the Roman wars of conquest must have had an adverse genetic effect by keeping Romans under arms so long that they could hardly have escaped being killed on the battlefield. We can be sure, however, that even if the descendants of the original Romans had continued to govern Rome, the disproportionate birthrate would eventually have laid the empire low.

Frank eulogizes the early Romans in these words:

> That calm temper of the old state-builders, their love for law and order, their persistence in liberal and equitable dealings, in patient and untiring effort, their deliberation in reaching decisions, their distrust of emotions and intuitions, their unswerving

devotion to liberty, their loyalty to tradition and to the state, are the things one expects to find so long as the old Roman families are the dominant element in the Republic.

We cannot speak of the spirit of Rome or the culture of Rome, says Frank, "without defining whether the reference is to the Rome of 200 B.C. or 200 A.D."

History must take cognizance of this change, and in doing so it is difficult to escape the conclusion that the change is primarily due to the fact that the Romans partly gave way before and partly merged their inheritance in a new brood which came largely from Asia Minor and Syria. According to this view the decline of Rome had begun in the last decades of the Republic.

Frank notes other causes of the decline, one of the most important being faulty judgment, which derives from diminishing intelligence. Tangible causes include excessive taxation, debasement of the coinage, slavery, unemployment among skilled workers and exhaustion of the soil. But he adds:

The economic factors to be considered in discussing the decline of the Roman empire, while numerous, do not seem to be the most vital ones. Most of them may be defined as symptoms of a general decay in the intelligence and vitality of the people then in possession of the government and its policies.

If from these many causes of Rome's decline we must select the more potent ones, we should be inclined to name first Rome's rapid and ill-considered expansion, the existence of slavery on a vast scale, and as an immediate consequence of these two, the thoroughgoing displacement of Romans by non-Romans.

Theodor Mommsen in *The History of Rome* (trans. W. P. Dickson, Vol. 5, p. 337) also attributes Roman decadence to the disappearance of the original gene pool: "The patrician body . . . had dwindled away more and more in the course of centuries and in the time of Caesar there were

not more than fifteen or sixteen patrician gentes (clans) still in existence." Caesar himself sprung from one of them. He was given the right of creating new patricians, but they soon bred themselves out of existence.

In the time of Augustus, according to Brooks Adams, some Romans were conscious that the sterility of the upper class must eventually deliver their city into the hands of the barbarians. When legislation passed in A.D. 4 failed to encourage marriage, new laws were introduced five years later. Some of the patricians protested and asked that the legislation be repealed. Augustus called them to the Forum and gave them a lecture that was passionate, even violent, in its earnestness. Those among them who were single were the worst of criminals, he asserted. They were destroyers of the race. Did they expect men to spring out of the ground to replace them? "While the government liberated slaves for the sole purpose of keeping up the number of citizens," Augustus thundered, "the children of the Marcii, of the Fabii, of the Valerii, and the Julii, allowed their names to perish from the earth."

But Augustus might as well have remained silent. The trend continued. "The bearing of children became unfashionable," said G. M. McCleary, in the *Hibbert Journal* (April 1947). "[As] bourgeoisie and nouveaux riches strove to emulate their betters in Rome, their families died out."

There is a study in *Mankind Quarterly* (January–March 1965) by S. C. Gilfillan entitled "Roman Culture and Dysgenic Lead Poisoning." Gilfillan draws on the opinion of other scholars as well as his own to propose an additional reason for Roman decline—the upper-class habit of cooking wine, grape syrup and acid foods in leaden or lead-plated vessels and storing liquids in lead-glazed pottery. Lead, Gilfillan alerts us, "produces sterility, miscarriage, stillbirth, heavy child mortality and permanent mental impairment in children."

Lead was plentiful and more easily worked than any other metal in classical times. Since its harmful effects were scarcely known, lead utensils were in great demand by those who could afford them. The wine jugs of the poor contained very little lead. Acid foods if stored, and especially if cooked, in copper or bronze produce copper acetate, which is greenish, bad tasting and sickening. Lead did not broadcast its poisonous qualities so obviously.

Lead colanders, toys, pencils, and wall paint were other sources of the poison, as well as lead pipes, roofs and cisterns. Some of the poor shared those risks, but except for those who worked with the metal, the lead danger for the lower classes was minor.

The low birthrate of the aristocracy meant succeeding generations were diluted with people promoted from the poorer segments of the population. In this way, if Gilfillan's theory is correct, the cream of each crop was brought to the top and then sterilized. It's a wonder Rome lasted as long as it did!

The lead culture, which was developed in Greece and may have been a cause of the intellectual collapse of that civilization, may also present a subtle genetic danger to modern man. Irving M. Shapiro writes in the *Journal of the American Dental Association* (Feb. 1, 1973) that he and his co-workers tested six brands of toothpaste. All contained lead, with a larger proportion in tubes that were nearly empty. Shapiro estimated that if a child brushes his teeth twice a day he gets 1,800 parts per million of lead each day from toothpaste, in addition to 130 ppm from food. The lead does not pass through the body, but accumulates in the bones.

Robert Gayre, the editor of *Mankind Quarterly,* wrote in the 1972 Fall issue a brief but significant article entitled "The Rise and Fall of Nations: Genetic Impoverishment." Here are a few excerpts:

Despite the fact that all scientists concerned with biology have ineluctably been forced to accept the implication of genetics, we find that these laws have had little or no effect on a large body . . . of sociologists, social anthropologists, political thinkers and philosophers, very many psychiatrists, and practically all politicians. . . .

It is therefore not surprising that the decline of nations is attributed to environmental causes. . . . Or, putting the matter another way, the result of immigration, emigration, war, taxation and other social forces are not seen at all in their genetic setting.

Dr. Gayre uses his thesis to explain the collapse of the British Empire:

For centuries overseas service had been dysgenic since its adverse effects had fallen disproportionately upon the elite of the nations making up the United Kingdom. This was particularly so from the nineteenth century onwards. One has only to visit Christian cemeteries in India to see the names of whole companies of men and their officers struck down by cholera in the same month to realize that overseas service in the nineteenth century was bleeding the nation of its adventurous elite. . . .

These continuous campaigns went on to the South African war, and then came the first Great War with its incalculable losses in manpower . . . for instance, after the battle of Loos, a second lieutenant came out commanding the remnant of a gallant Highland regiment. When it is realized that Britain (like Spain before her) was wedded to a principle which was a selective recruitment of only the best for slaughter . . . then the genetic loss becomes evident. It was not only that a generation was virtually wiped out, but it was selective of the leadership in all classes. The Second World War continued this same trend, although on a less stupendous scale.

Dr. Gayre concludes with evidence from more recent history:

Eleanor Rathbone, a well-known liberal Member of Parliament, brought in an Act for family allowances, as a consequence of which, just at the very time when middle and upper classes had

to restrict their birth rates, the least endowed elements genetically of the population were encouraged to expand theirs. Following this came Lord Beveridge and his welfare state which has, as a consequence, continued and developed this trend further.

Cooperative living and interdependence are the essence of civilization. Since one man's work is usually dependent on another's, orderly and systematic patterns of behavior are necessary. Interdependence can be described as a form of reciprocity. In a complex civilization the importance of an individual's part in the production process is difficult to evaluate. This seems to account for the common failure to render equal service for service given.

When cooperative living becomes highly developed, the weeding out process reduces to zero. The strong create living patterns that protect themselves, but also protect the weak and the uncooperative. The social appetite is glorified. Service to others, and especially to the helpless, is recognized as the primary moral imperative. Then the adverse birth rate differences take effect. The less intelligent multiply more rapidly than the more intelligent. In its net effect, evolution doesn't merely stop; it goes into reverse.

Gradually a weakening of average intellectual capacity sets in. Soon the wisdom needed to maintain the complexity of civilization is no longer available. At the same time the problems themselves grow more difficult. Judgments become more ill-advised. Government moves farther from the people. Issues have to be settled by force. Suffering increases. Long-time objectives are abandoned as people live more for the moment. The civilization may then be overcome by conquering invaders, or it may sink into a dark age of its own creation.

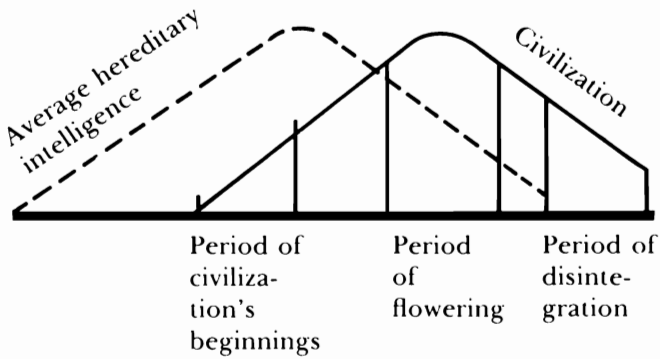
Civilizations break up because family and domestic incentives are often superseded by incentives for social accomplishment. The breeding is left mainly to those who are incapable of achievement of any sort. As we have said,

civilization is cooperative living. But without brains to direct the cooperation there is only barbarism.

In our own civilization we see a lessening of the struggle for survival. Welfare does away with natural selection. Nothing in our present environment can serve as an adequate substitute for the harsh means evolution adopted to prevent the weaker elements of civilization from playing a major part in the formation of subsequent generations. Compassion, unfortunately, is the enemy of biological progress.

Being, in part, an accumulation of skills and know-how, of buildings and tools, of transportation and communication, civilization must necessarily lag behind the concentration of brain power on which it depends. And since the visible forms and structures of a civilization are an accumulation, they may endure for decades after average intelligence has declined far below the level required to create the civilization.

The following chart serves to illustrate these points.



Lag of a civilization behind the rise and fall of the intelligence on which it depends.

At the left part of the two curves the environment is harsh. Though the less fit have more children than the more fit, the children of the latter survive in greater num-

bers, so average brain power increases. As the broken line showing hereditary intelligence reaches its apex, cooperative living takes over and more and more people of below average intelligence are kept alive. Their birthrate being higher, they survive in larger numbers. Average intelligence declines.

To sum up: (1) the cause of the rise in the civilization curve is the antecedent rise in the intelligence curve; (2) the cause of the leveling out and downturn of the intelligence curve is the rise in the civilization curve.

At the stage at which the less intelligent offspring dominate the birthrate, specialization and other chief attributes of civilization are not yet very far advanced. But since artifacts and organization are accumulating, civilization continues to expand, even while intelligence is declining through the adverse differences in survival ratios. The growth stops, however, when average intelligence falls below a minimum level.

As a general rule, in any civilization the less capable have birthrates higher than those of the more capable. In polygamous societies, however, this rule does not hold. Usually, however, polygamy surrenders to monogamy before a civilization gathers momentum.

That the less capable have a higher birthrate is important, but in the difficult times that precede civilization it is not of crucial importance. If it were, there would never be any such thing as civilization.

Let's consider the more intelligent segment of the female population of a tribe. How do the female offspring who live long enough to reproduce compare with their mothers in numbers? The new potential mother (npm) rate is the number of female children who reach the age of reproduction, compared with the number of women of the same age in their mothers' generation. In a prehistoric society a thousand women in the higher classification typically would have 4,000 female babies, of whom 3,000 would themselves

become mothers. Consequently the npm rate of the thousand women is 3. A thousand women in the lower classification would have 8,000 female babies, of whom 2,000 would be new potential mothers. The npm rate of the latter is 2. That 3 to 2 ratio is characteristic of prehistoric times and is both the stimulus and precondition of civilization. Since the more capable women have a higher npm rate than the less capable women, tribal intelligence rises with each succeeding generation. Accordingly, the higher birthrate of the less intelligent group is not controlling. The npm rate is the deciding factor.

In tribal times, the social structure is embryonic. People have to spend almost all their days caring for themselves and their offspring. As the less capable can't do this very well, their infant death rate is high, and their npm rate is low. The more intelligent element does better, in spite of its lower birthrate.

As for the "survival rate," it is usually taken to be the number of survivals compared with the number of original offspring. At every stage of civilization the survival rate is higher in the more capable group. But after welfare programs raise the survival rates of everybody, though the survival rate of the more fit is still a little higher than that of the less fit, the npm rate of the latter surpasses that of the former. When this happens, the civilization is doomed. After centuries of inertia, disintegration begins. Whether or not a new civilization can start up in the same geographic area depends on: (1) conditions again being right for the sorting out of the inadequate; (2) an invasion of people who have themselves been subjected to the sorting process.

Looking again at the diagram on page 126, we are now in a position to get a passing grade on the following exam:

Question: What causes the rise of civilization?
Answer: An earlier rise in problem-solving ability.

Question: What causes the problem-solving ability to level off?

Answer: The civilization, which now puts a strong emphasis on cooperation, protects people indiscriminately. Men no longer need brains and character to stay alive. The weeding out process has ceased. The broken line in the diagram flattens out—before the civilization curve moves significantly upward.

Question: What makes the broken line start to sink?

Answer: The birthrate for the mentally slow is higher than the birthrate for the mentally agile. Consequently, when the weeding out ceases, the offspring of the former become more numerous than the offspring of the latter. The result is a decrease in average intelligence.

Question: Why does the civilization curve continue to rise long after the intelligence curve starts to descend?

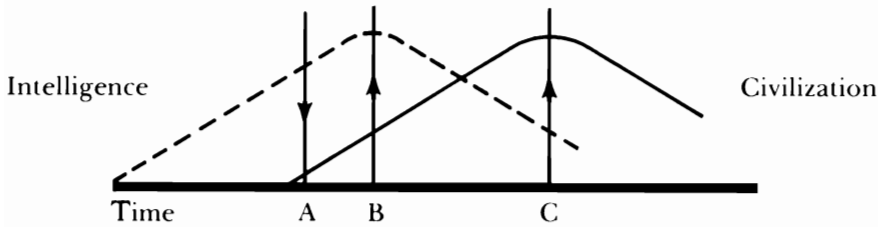
Answer: Civilization is an accumulation of ways and means of living. Although a smaller and smaller proportion of people are creative, their inventions and innovations add up to an impressive total and the social structure becomes increasingly rich and complex.

Question: Why is the importance of high intelligence to civilization generally overlooked?

Answer: The time lag between the decay of intelligence and the decay of the civilization obscures the total dependence of civilization on human creativity. The outward splendor manages for a time to hide the inner rot.

Let us imagine an observer stationed on the solid line, a little to the right of its intersection with the broken line of the intelligence curve. He would not be likely to foresee that the rising "world line" of his civilization would soon change its direction. Few men, no matter how intelligent, would know that the curve of average intelligence had already peaked some time in the past and was already sloping sharply down. Few would sense that the downturn in the broken line resulted from carrying out one of mankind's most honored moral commands—not only to love one's neighbor but to preserve his life, no matter how counterproductive his existence may be to the population as a whole.

To bring things into better focus we can divide the life span of a civilization into three stages:



An arrow shows the direction of major influence at the indicated stage.

At Stage A, the civilization curve begins because the intelligence curve has risen to a high enough level to make cooperative action successful.

At Stage B, civilization has reached the point where it just offsets the weeding out process. The problem makers still have a high deathrate, but their birthrate is also high, so their proportion of the population remains the same. At this stage civilization is beginning to exert a depressing influence on average intelligence by insuring a longer life for the unfit, thus ending the rise of the intelligence curve. As it proceeds to the right of B, the civilization becomes

still more efficient, but average intelligence now decreases because the increased npm rate of the unfit makes them an increasing proportion of the population.

At stage C, average intelligence, because of the birthrate differential, has declined to such a low level that the civilization begins to deteriorate.

Although the point is hard to grasp, the benefits of a civilization go hand in hand with its decline, while at the same time being the causes of its decline. The collective activity which is the hallmark of civilization provides not just more and more goods and services but, particularly in Western civilization, an almost suffocating amount of security in the form of doles, grants, gifts, food, housing, clothing and health care. This cradle-to-grave security, needless to say, is not limited to those who can and do carry their part of the load. The weaklings, the ne'er-do-wells, the antisocial elements of the population share in and come to dominate the welfare programs. As a result, the social organization is weakened through the subsidized proliferation of its most unproductive elements. If the burdensome members of society who received all these benefits would agree to refrain from increasing the load they put on others, if they agreed to refrain from reproduction, the social organization would be more enduring. But security has the habit of destroying itself by wrecking the social organization that provides it.

Earnest A. Hooton, the late Harvard anthropologist, wrote in *The Twilight of Man:*

> Material prosperity encourages the preservation, pampering, and reproduction of the biologically inferior elements which are parasitical upon rich civilizations. Then some . . . culturally crude stock crashes in and wipes clean the slate. . . . We can either prune off our own rotten branches or submit to a ruthless cutting down and thinning out by more vigorous conquering stocks.

All the negative influences listed in this and previous chapters have been operative in the civilizations of the past and in differing degrees have been the causes of their decline. It is our thesis that, if mental ability increased instead of declined as the problems of a civilization became more complex, the people would be able to control both the quantity and quality of their population, conserve their resources and prevent the complexity of the social order from getting out of hand. In short, if capable, intelligent people had the most offspring, society would solve its problems instead of merely wrangling about them.

Chapter 11

The Squandering of Genius

O weakness of the great! O folly of the wise!
Where now the haughty Empire that was spread
With such fond love? Her very speech is dead.
William Wordsworth

The Sumerian civilization began six thousand years ago in the lower Mesopotamian Valley, in what is now Iraq. Mesopotamia means "between the rivers," between the Tigris and Euphrates, which flow southeastward and eventually join and continue on to the Persian Gulf.

Sumer is usually designated as the most ancient civilization, the first to establish a matrix of homogeneous cities. There were other cities before Sumer, such as Jericho, Jarmo and Chatal Hüyük, but most historians refuse to classify them as having belonged to any "civilization." Neither has the advanced culture of the Cro-Magnon people been described as "civilized." The Megalithic peoples, including the builders of Stonehenge, may have had authentic civilizations, but on this point history books are noted for their ambiguity.

A story in *Nature* (June 7, 1974) states that at Newgrange, a tourist mecca in County Meath, Ireland, there is a 5,000-year-old rocky eminence about the size of a football field. A passage, about sixty feet long, leads to a burial room which contains the fire-scorched bones of five individuals.

During the winter solstice the sun shines down the entire length of the passage to the burial chamber! Irishmen of 5,000 years ago not only lived in a complex social organization, but some of them must have been astronomers.

About 200 such passage caves are said to exist in Ireland. Though Newgrange is the only one known to exhibit a knowledge of astronomy, we may well ask if its occupants or the occupants of any of the other 200 sites were "civilized?" And if so, did their civilizations precede Sumer's?

Can we be certain that future archaeologists will not disclose evidence of civilizations much more ancient than we have hitherto imagined? Before Sumer was named the oldest civilization, Egypt held the title. The Indus civilization, now considered the third oldest, was not even discovered until 1921 and its importance has been recognized for little more than a generation.

No one knows exactly where the Sumerians lived before they came to Sumer. They may have come from the hill country in the north or arrived by sea across the Persian Gulf.

One argument for assigning the origin of the Sumerian founding fathers to the highlands is their places of worship. They built their temples on artificial hills or ziggurats which, not the Egyptian pyramids, may have been the models for the Mayan buildings in Mexico. The latter, being step pyramids, more closely resemble Mesopotamian architecture. Also, the Mayans used their "artificial hills" for temples, as did the Sumerians. But in 1962 it was discovered that at least one of the Mayan ruins was the tomb of a king. An inscription informs us that about 1322 years ago the occupant had ascended to the throne at age 28 and ruled for twelve years.

The Sumerian ziggurats must have served as a blueprint for another historical marvel, the Hanging Gardens of Babylon, one of the ancient world's Seven Wonders. Nebuchadnezzar is said to have built them to please his homesick

wife, who longed for the hills of her birthplace in Media. The lush gardens on their several levels were irrigated by water pumped from the Euphrates.

Not a trace remains of the Hanging Gardens, but there are ruins of a ziggurat not far away at Ur that may be older than any other pyramid on earth. Of solid brick, it is rectangular in shape, 250 feet long by 150 feet wide by 70 feet high.

Sumer, in its first thousand years, expanded to a territory of 10,000 square miles, the size of Massachusetts. By that time it comprised several city states, ruled by kings and priests. Each city was nourished by about 100 square miles of fertile farm land.

From 3,000 to 2,500 B.C. has been designated as Sumer's early dynastic period. It was outstanding for the building of temples and palaces, and the development of foreign trade. The scarlet pottery, which characterized the beginning of the period, gave way to metal containers and more prosaic pottery—adapted to the large-scale production required by a thriving commerce.

Sumerian cuneiform, now considered the world's first writing, seems to have come into use as an organizational tool for agriculture. The economy turned socialistic under the direction of the priests, as the financial records show. Tom B. Jones in his book *Ancient Civilization* states that cuneiform clay tablets indicated the Sumerian production of barley to be twenty-five to thirty bushels per acre. In mathematics, the Sumerians, whose priests used double-entry bookkeeping, employed a number system based on sixty, which is still popular in Western geometry and time-keeping.

At first the cuneiform system of writing consisted of pictographs. It may not have developed into ideographs and syllable symbols until after the Sumerians had passed from the scene.

The Sumerian pantheon contained a variety of gods—personal, city, state and universal. The sky god, Am, was

given the serial number of sixty, considered the perfect number. Enlil, number fifty, was an organizer and promoter. Enki, forty, was the god of wisdom, medicine and writing. All the universal gods had local headquarters. There were fifty temples at Eridu, for example, and forty at Nippur. Some of the male gods had wives who were addressed with a title equivalent to "Lady."

In all, there were three Sumerian dynasties, the final one beginning about 2100 B.C. when the Governor of Ur, still a Sumerian-speaking city, took over the kingdom. But in a few more decades Sumer was no longer Sumerian. After 2000 years, about seventy-five generations, it had passed into other hands.

A few words of Sumerian persisted in the language of the Semitic peoples who were the heirs of Sumer, while the most prominent features of the Sumerian scene—the ziggurats—became landmarks of the Babylonian and Assyrian cultures.

Why did the Sumerian civilization disappear? There was no apparent reason. It was almost certainly the subtle erosion of heredity by birthrate differences. The Sumerian civilization probably annulled, as all civilizations have tried to annul, evolution's brutal way of dealing with incompetence.

Brilliance must have been a common intellectual trait of the early Sumerians. But after sixty or seventy generations, the number of Sumerian leaders capable of making wise decisions about complicated problems must have dwindled catastrophically. The state was now ready to be taken over by the Semites who, in the environmental harshness of their deserts, had been breeding up in the two thousand years in which the Sumerians had been breeding down.

Egypt, the second civilization to flower, whose inhabitants were probably as inherently gifted as the Mesopotamians, was not an uninterrupted social continuum. Each major burst of innovation was as new as the Gothic explosion

that followed Europe's Dark Ages. And Egypt's ups and downs reveal certain processes and workings of civilization that justify their inclusion in this study.

The geographic area of early Egypt was, like that of Sumer, about the size of Massachusetts and contained a life-giving river. The fertile strip of land (550 miles long by 30 miles wide) watered by the Nile permitted a high density of population and the complex social order that went with it.

As Egypt entered its historical era about 6,000 years ago, there were forty-two separate states between the sea and the Nile's first cataract. These states, called "nomes," seem to have been peopled by tribes or clans, each with its own river frontage.

Because the Nile's soil was extremely fertile, the population expanded to the stage where social relations were institutionalized and authority formalized. The long, navigable river, which flowed past each "nomesite," greatly stimulated communication and commerce.

In the days before Egypt's unification, the people were already making pottery, fishhooks and boomerangs. Later they added copper objects and ceramic figurines, while their pottery became a work of art. Trade flourished, as proved by shells from the Red Sea, ivory from the tropical south, turquoise from Sinai and cylinder seals from Mesopotamia.

Since the Nile runs from south to north, Southern Egypt, the first part of the country to be unified, is Upper Egypt. Lower Egypt was consolidated soon after. In *The Social Thought of the Ancient Civilizations* J. O. Hertzler tells us that even in the days before the nomes were organized into federated kingdoms there was a great deal of innovation and "culture borrowing." Houses were built of sundried brick; pottery was decorated; cloth was made of domestic flax; animals were domesticated; grains were farmed; and tools were of bronze, carved ivory and stone. Boats had sails and oars, and were used for trade with other nomes.

As villages took shape, writing came into being—the idea probably coming from Sumer.

Some scholars, including Edward Meyer and J. O. Hertzler, assert the Egyptian calendar was in use by 4200 B.C., though others say it was not invented for another 1400 years. It had the 365-day year, divided into twelve months of thirty days each, plus five holidays.

A personage named Menes became the first king of Upper Egypt, presumably by overcoming the chiefs of several nomes. He and his dynastic successors began the amalgamation of the separate states of Upper and Lower Egypt, which was completed by the pharaohs of the Second Dynasty.

Beginning with the Third Dynasty, about 2700 B.C., a period of 500 years is designated as the Old Kingdom. It was a time of prosperity, growth and remarkable achievements, reflecting an uncommon concentration of brain power and an absence of the "emergency problems" which demand so much energy and attention in the later stages of civilization.

This 500-year span was about twenty generations. How many of us can trace our ancestry back twenty generations? The question is raised to illustrate the long life span of the Old Kingdom, and the great number of changes that must have taken place in the population during these centuries.

It was during the Old Kingdom, circa 2400 B.C., that the Great Pyramids were constructed. The first one was built by King Zoser of the Third Dynasty. It was a step pyramid, which is impressive evidence that the design was borrowed from Sumer, where the ziggurats were all step pyramids. The oldest known mummy was found in Zoser's massive tomb—the remains of a musician named Nofre, wrapped in jute in a sarcophagus painted red, yellow and blue.

The largest pyramid, built by King Cheops a century later, is 784 feet on each side and 482 feet high. A hundred thousand workmen labored on it for twenty years. Consider

the organization that such a project required. There is no more striking example of man's emphasis on the self than Cheops's Great Pyramid.

The first twenty generations of the Old Kingdom were an era of law, order and tranquility. The self-destruct principle, however, would have reliably predicted the disorder that took place in the 7th through 10th Dynasties, the "First Intermediate Period," whose time span has been variously estimated from 100 to 300 years. If it was only 100 years—say four generations—the elimination process must have been severe to have reduced the proportion of the anti-social elements to the point where order could again prevail.

Genetic deterioration is not the only reason why the Old Kingdom expired in chaos. Some historians blame the later pharaohs for ruling neither wisely nor well.

The deterioration seems to have set in in the fourth of the Old Kingdom's six dynasties. One pharaoh, satisfied that his pyramid had provided an imposing resting place for his own eternity, allowed his courtiers to erect their own expensive tombs. He also gave them lands to supply their tombs with provisions. This may have become a common practice. As the pharaohs deeded away tax-free lands, they gave up some of their power.

Pharaonic rule was also diminished by another cause. Though the nomes had been tribal societies in primitive times, when they were consolidated into kingdoms, they were ruled by governors appointed for short terms. This kept them dependent on the continued approval of the pharaoh. But as the centuries passed, the gubernatorial posts were made hereditary. The governors grew richer and more independent at the expense of Egyptian unity.

The interlude between the Old and the Middle Kingdom was a time of troubles, as we learn from the testimony of a highly placed government official named Ipuwer, who wrote:

Forsooth, the laws of the judgment hall are placed in the vestibule. Yea, men walk upon them in the streets and the poor tear them up in the alleys.

Forsooth, many dead men are buried in the river. The stream is a sepulchre, and the pure place [embalming place] is become a stream.

This last passage has been interpreted to mean that the dead were too numerous to be embalmed and buried, so were thrown into the canals and the Nile. Here we might remember that in eras of stress the death rate of unadaptable individuals shoots upward. But since natural selection is not geared to definite specifications, many capable individuals die along with the unadaptable. But the latter, as a rule, die in greater proportion.

Some other observations of Ipuwer delineate the evils that may doom our own civilization unless we make drastic changes in our reproduction practices:

Forsooth, the land is full of foes. A man goeth to plow carrying his shield.

Forsooth, plunderers are everywhere. . . . The women are barren, and there is no conception. . . . Plague stalketh through the land and blood is everywhere.

Forsooth, every town saith: "Let us drive out the powerful from our midst."

Forsooth, squalor is throughout the land. There is none whose clothes are white in these times.

Forsooth, the river is blood.

Forsooth, men are few. He that layeth his brother in the ground is everywhere. . . .

Forsooth, great and small say: "I wish I were dead!" Little children say: "He ought never to have caused me to live."

Forsooth, all female slaves have power over their mouths. When their mistresses speak, it is irksome to the servants.

Forsooth, men sit in the bushes until the benighted cometh, in order to take from him his load. What is upon him is stolen. He getteth blows of the stick . . . and is slain wrongfully.

Behold, it is come to this, that the land is despoiled of the kingship by a few senseless people.

Behold, the officers of the land are driven out . . . from the houses of the kingdom.

Behold, they that possessed clothes are now in rags. He that wove nothing for himself now possesseth fine linen.

Behold, the poor of the land have become rich, he that possessed something is now one that hath nothing.

Behold, they that possessed beds now lie upon the ground.

Behold, he that had no yoke of oxen, now possesseth droves. He that could not procure himself oxen for ploughing now possesseth herds.

Behold, the mighty ones of the land, none reporteth to them the condition of the common people. All goeth to ruin.

Why did Egypt's Old Kingdom, a magnificent civilization, "crumble to the dust before the battering thistledown?" Very simply, the less capable had the most offspring and a high degree of social organization permitted this offspring to survive and then produce offspring of their own.

When a civilization's orderly processes break down, evolution automatically becomes effective again. In Egypt's Dynasties VII through X, many family lines were terminated. If death failed to snip the line in the first generation, it had additional chances in each subsequent generation until order was restored. Eventually the elimination of the less fit raised the average intelligence level of the remaining Egyptians to where the land was ready for a new cycle of civilization.

Egypt's second great civilization, the Middle Kingdom, lasted 347 years, from 2133 to 1786 B.C. Its high points took place in the 11th and 12th Dynasties.

Egypt's capital was now moved to Thebes, 350 miles south of Cairo, where as a result of three and a half centuries of intensive building there remains "the most extensive area of magnificent ruins to be found anywhere in the

world." The "pylons, courts and columned halls," the stone columns and lintels, the temples and palaces are mute testimony that there was a time when Egypt possessed inventiveness and adaptability that have rarely been surpassed, as well as patience and persistence in following long-range objectives that have never been equalled.

Genius readily found expression in architecture, engineering and literature during the 11th Dynasty. But in the 12th Dynasty, from 1991 to 1786 B.C., the emphasis seems to have been on military force.

The first monarch of 12th Dynasty, Amenemhet I, regained much of the power that had been lost by shortsighted pharaohs before the First Intermediate Period. In 1971 B.C. he made his son Sesostris co-regent, and for the last ten years of his father's reign, Sesostris was the more active partner. Egypt assumed control of Nubia (now Sudan), and had copper mines in Sinai.

Amenemhet II, the grandson of Amenemhet I, ruled from 1929 to 1895 B.C. He gave most of his attention to foreign policy and to the mining of precious metals in Nubia and Sinai.

Amenemhet III (1842 to 1797 B.C.) raised the Middle Kingdom to its zenith. He completed a system by which water was brought into Lake Moeris southwest of Cairo. In addition to draining marshes, he kept the mines of Sinai busy and he supervised the construction of the elaborate temple complex in Thebes.

The reign of Amenemhet IV (1798 to 1790 B.C.) was peaceful and prosperous, but it was followed by Egypt's Second Intermediate Period—eight generations of internal turmoil. Again a civilization practically vanished overnight, as factions split the empire into small kingdoms. The fragmented land was an invitation to the Hyksos, a nomadic and mixed people whose numbers had been expanding in the area northeast of Egypt. They conquered several of the small kingdoms, relying in part on the psychological effect of their horses, chariots and bronze armor. It was the first

time that Egyptian armies had been confronted by this advanced military technology.

After approximately 200 years of war and mindless drifting, Egypt's third civilization took shape, lasting from 1580 to 1099 B.C. It began with the 18th Dynasty which organized the states into an empire that remained in the hands of one family of pharaohs for almost 200 years. Amosis, its first pharaoh, expelled the Hyksos and reestablished control over the local kingdoms and Nubia. His successors conquered Palestine, Phoenicia and Syria. Amenhotep III, "The Magnificent" (1417 to 1379 B.C.), is the most renowned of Egypt's "New Empire" leaders. He continued the imperial era that was the pride of his father Amenhotep II. He pushed the copper mining in Sinai and Nubia to new records of production, and was responsible for many of the huge buildings which are major attractions for present-day tourists, including the main portion of the temple of Luxor and part of the temple of Karnak. Diplomatic contacts and political marriages for his sisters were important considerations in his royal projects.

Amenhotep IV (1379 to 1362 B.C.), son of Amenhotep III, was the monotheist who believed that the one and only god was the sun. His incredibly beautiful wife, Nefertiti, presented him with six daughters. But he spent so much time on his religious reforms he neglected the affairs of government. Egypt went into a slow but continuous decline, from which it has never recovered.

The records reveal diminishing competence in all areas of statecraft. There was no rush to chaos this time, just an all-embracing torpor. Egypt's greatness was gone—forever.

Another early civilization of the riverine type was that of the Indus Valley. Here fertility and the regular watering of the soil encouraged large-scale agricultural production, political organization and all the other prerequisites of urban society.

The discovery of the Indus Valley civilization in what is now West Pakistan came as an archaeological surprise. Egypt had remained in man's historical consciousness and had been known to scholars for thousands of years. Sumer, the Shinar of the Bible, has also been generally known, although only in recent decades had its efflorescence been recognized as preceding Egypt's. But the Indus civilization, contemporary with Sumer and Egypt, and more extensive than both of them put together, had been erased from human memory for some three thousand years.

Almost a century ago railroad builders in Pakistan, then a part of British India, dug out bricks from old buildings in a buried town and used them in their construction projects. They were kiln-dried bricks, and consequently no one imagined they represented an ancient civilization. As time went on, puzzling artifacts came to light, whetting the interest of archaeologists. In 1921 systematic digging was begun. Three cities have been excavated, all of them between Hyderabad and Lahore. Of the three, Harrappa is the largest. But it is the least preserved because the buildings had served as the workers' brick quarry. Mohenjodaro, downstream from Harrappa, has provided most of the surprises.

The Indus civilization, as demonstrated by the location of the mounds of its several cities, comprised the largest civilized area in the world at its time. Among other things, it luxuriated in domestic animals: cattle, goats and sheep; cats and dogs; water buffaloes, zebus, asses, horses, camels, even perhaps domesticated elephants. There were granaries and mills, with comparatively humble dwellings nearby for the workmen, who were probably slaves.

The people wore cotton clothing and such ornaments as bracelets, combs, necklaces, rings and nose-rings. Men shaved their upper lips.

Families lived in two-story houses whose rafters and doors were of wood. The houses themselves were built of

wood, bricks or stone. Roofs were flat, and there were no windows. Candles furnished the illumination. Heating seems to have been provided by portable charcoal stoves carried from room to room. Cooking was performed in a courtyard. Sanitation was furnished by clay pipes from the houses to sewer drains covered by stone slabs.

For the children there were rattles, whistles and such toy animals, some of them on wheels, as bulls, donkeys, dogs, elephants, pigs and rhinoceroses.

Indus craftsmen made pottery that was decorated with black designs on a red background. They used a potter's wheel and much of the pottery was mass-produced for commerce. Artisans worked in gold, silver, copper, lead and bronze, and made swords, spears and arrowheads, as well as saws, axes and adzes, and knife blades and razors. One bronze saw, dug up in Mohenjo-daro, was the finest tool of its kind to be found in any early civilization and was not surpassed until the Roman era.

For transportation the Indus people relied on boats and oxcarts. There is evidence of trade as early as 2350 B.C. —westward to Mesopotamia and eastward to the Far East.

Weights and measures were standardized. The Indus equivalent of our foot was from 13 inches to 13.2 inches. The cubit was 20.3 inches to 20.8 inches. The weights used on balances were stones cut in cubes in the geometrical series: 1, 2, 4, 8, 16, 32.

In addition to bronze, Indus artists relied on alabaster, terra cotta, soapstone, sandstone and limestone for their creations. But compared with Sumerian and Egyptian craftsmen, they were not very competent. One of the most common Indus figurines, sitting in the yogi position, had three faces and horns and may have been the forerunner of the Hindu god Shiva.

The streets of Mohenjo-daro were laid out in grids, north to south and east to west—an indication of an advanced culture when the city was founded. The close attention to

geometry may have affected burial habits. The graves were in a north-south position with heads to the north. Often the dead were buried with an ample supply of pottery.

In both Harrappa and Mohenjo-daro there was an enormous forty-foot artificial hill, which served as a strongly fortified citadel topped by a palace and a temple. Each hill covered an area twelve times as big as a present-day football field. Could the idea have come from the ziggurats of Sumer?

The Indus people had writing, but discoveries so far have been restricted to seals and inscriptions in copper. The symbols, totalling about 400, have not yet been decoded. Most of the writing was probably on something as impermanent as paper and has turned to dust over the centuries.

The forty generations of the Indus civilization taxed its heredity base too much. As the *Encyclopaedia Britannica* (14th edition) says of Mohenjo-daro:

> One thing is clear. The city was already in an advanced stage of economic and social decline before it received the coup de grace. Deep floods had more than once submerged large tracts of it. Houses had become increasingly shoddy in construction and had often been carved up into warrens for a swarming lower-grade population. Everywhere standards had fallen. The final blow was sudden, but the city was already dying.

Notice the phrase "swarming lower-grade population."

The official end of the civilization seems to have been marked by an invasion of aliens, though signs of violence have been found only in Mohenjo-daro.

There is a tentative theory that the destroyers were the Aryans, the founders of India's most enduring civilization. Quite likely some of the seeds of the culture the Indo-Europeans planted in India were taken from the Indus Valley.

The desecraters of Mohenjo-daro, whoever they were, left dead men, women and children where they fell. Their

skeletons, together with those from recently unearthed graves, are said to reveal two types of Indus residents, some long-headed, some with heads of the Australoid shape. The former were supposedly the masters, the latter the subjects.

The culture of the indigenous village peoples that preceded the Indus civilization had no apparent links to that of the 2500 to 1500 B.C. period. So it seems that the founders of the Indus civilization were themselves invaders.

In forty generations of relative order and stability the indigenous tribes overrun by the Indus invaders would have been provided the opportunity to greatly outnumber their masters and would have created conditions that would certainly have brought about an era of stagnation or worse for the civilization. Paradoxically intelligence, not stupidity, leads to the extinction of family lines in a civilized society. And the reason lies in the advanced social order which the intelligent people devise, but which works for their undoing.

In this chapter we have discussed five of the earliest multiple city cultures: Sumer, the Old, Middle and New Kingdoms of Egypt and the Indus Valley. Just as Egypt was the geographic locus of several enduring social structures, other civilizations besides the Sumerian existed in the Mesopotamian valley. The most prominent were Babylonia, Assyria and Persia. Add to these China, the civilizations of the Olmecs, Mayas, Aztecs and Incas in America, the hundreds, even thousands, of early city states that the archaeologists are gradually uncovering, and what a wealth of material there would be for a college course called Civilizations in Comparison! By studying the growth and decay stages of a multitude of civilizations we would learn much more than by the standard method of isolating one specific culture and conducting a microscopic inspection of its various political, economic and social manifestations.

In the single-city and multiple-city civilizations examined

in this chapter we have again proved the rule that persons of high intelligence have wide and intense interests, the variety of which, absorbing so much of their energies, limits the number of their children, and thus reduces the intelligence available for the maintenance of civilizations. Consequently, while the less gifted segment of the populace proliferates, every civilization squanders the genius of its organizers.

Chapter 12

The Self-Destruct Principle at Work in America

The true test of civilization is . . . the kind of man the country turns out.

Ralph Waldo Emerson

Though many educated people are aware that children from large families usually make lower grades on intelligence tests and school examinations than children from small families, only a few have sensed the true significance of this phenomenon.

The causal forces are both environmental and hereditary. The parents in larger families are usually less effective in educating their children. Equally important, in statistical terms, though with many exceptions, the larger the family the lower the intelligence level of their children.

Environmentalists view the facts from one side only. They blame the low achievement of members of large families on nurture not nature and claim it is correctible. The problem, they say, can be solved by raising the family's standard of living and providing an enriched environment for both parents and children.

Nevertheless, the proposition that heredity is a significant factor in achievement cannot be dismissed. And even if our present rate of deterioration derived entirely from environmental influences, at this stage of our history there

would be no hope of halting the trend toward chaos unless we established some kind of brake on reproduction. Birthrates of low-income groups are getting out of hand. We must give the world's poor people more constructive things to do than the production of more poor people.

At this juncture in our study we will focus on civilization in America. We will try to fathom what will happen to our civilization when more than half of every generation springs, as it is now doing, from the lower achieving half of the previous generation. This is the kind of reverse selection that has destroyed a hundred civilizations before ours.

When the manuscript of this book was sent to Dr. Max Rafferty, Dean of the School of Education at Troy State University and former head of California's Department of Education, he observed that nationally standardized tests given to students in California grade schools might lend support to the thesis that birthrate differentials were causing a deterioration of the national IQ.

Dr. Rafferty was referring to "The Statewide Standardized Test Results" for two different grades in the school years 1969–70, 1970–71 and 1971–72 conducted by the Office of Program Evaluation of the California Department of Education (see opposite page).

California, the most populous state, has the largest number of public school pupils and is among the top ten states in educational expenditure per capita. Yet there was a falloff in the average pupil score for every subject.

On the basis of similar and more sweeping evidence U.S. Education Commissioner Terrel H. Bell has recommended the "major rethinking of education on several levels." Bell was deeply disturbed by a government study that showed fourteen percent of all adults were unable to make out a check correctly. Of 17-year-olds, only one percent could correctly balance a check book, and only ten percent could figure out a taxi fare. Of adults, 29 in 100 could not compute the wages due if the pay check included some time-

CALIFORNIA STANDARDIZED TEST RESULTS

Median Scores Grade 6	*1969–70*	*1970–71*	*1971–72*
Verbal ability	98.1	97.2	96.6
Reading	61.7	61.2	59.8
Language	58.3	57.5	55.5
Spelling	22.6	22.5	21.9
Arithmetic	74.9	72.6	69.8

Median Scores Grade 12	*1969–70*	*1970–71*	*1971–72*
Verbal ability	101.5	101.0	99.1
Reading	21.5	21.2	20.8
Expression	40.8	39.9	38.6
Spelling	8.2	8.1	7.8
Quantitative	13.2	12.9	12.8

and-a-half for overtime. The 13-year-olds of 1974 could not write as well as those of 1970. Spelling was worse, vocabulary more primitive, sentence structure more haphazard. The examiners were led to conclude, "American teenagers are losing their ability to communicate through written English."

The same trend was apparent in the College Entrance Examination Board's Scholastic Aptitude Tests (SAT) scores. In 1963 the average score for Verbal Ability was 478; in 1975 it was 434. The score for Mathematical Ability in 1963 was 502; in 1975 it was 472. Since Scholastic Aptitude Tests are taken by about a million students each year, educators are becoming greatly concerned about the unmistakable decline in the learning curve.

As to the cause or causes of this decline, most attention so far has been devoted to educational methods. Other factors have been considered, such as TV, home influences, and the type of neighborhood. As might have been expected, all the theories put forth to date have related solely

to the environment. Doubtlessly, some of them have validity. On the other hand, the diminishing learning capabilities of our teenagers may be part of a larger and more tragic story in which biology plays the dominant role.

Recent census studies make it possible to compare present-day birthrate differences with family living standards (see PC(2)-3A, U.S. Census of Population, 1970, *Women by Number of Children Ever Born,* Table 58). It turns out that family size is inversely proportional to economic well-being. Some 1970 census figures, for example, correlate housing characteristics with number of children per thousand mothers. The table is broken down into such categories as regions, property value and rent. Most revealing are the figures relating to plumbing.

TABLE 58

	Children per 1,000 Mothers	
	White	*Negro*
Housing with all plumbing facilities	3,280	4,048
Lacking some facilities	4,403	5,773
Without any plumbing facilities	5,055	6,827

Those with no plumbing facilities are likely to be ardent advocates of equal opportunity but by having five children per family they are not providing their children with opportunities equal to those enjoyed by children in smaller families. Parents without plumbing have more children than the average reader of this book, and more than the average taxpayer. The children of the poor constitute a disproportionate share of their generation. How many generations is it likely to take before they put enough pressure on political leaders to make their wishes the controlling national policy?

Figures for the 1960 census were tabulated somewhat differently, but they tell the same story (see PC(2)-3A, U.S. Census of Population, 1960, Tables 41 and 42).

TABLES 41 and 42

	Children per 1,000 Mothers	
	White	*Nonwhite*
Sound Housing		
With all plumbing facilities	2,617	3,148
Lacking only hot water	3,596	3,789
Lacking other plumbing	3,880	4,778
Deteriorating Housing		
With all plumbing facilities	3,590	3,737
Lacking only hot water	4,324	4,080
Lacking other plumbing	4,700	5,201
Dilapidated Housing	5,001	5,201

In the United States as a whole, white mothers in dilapidated housing had almost twice as many children as mothers in sound housing with all plumbing facilities.

Affluence is only a partial indicator of intelligence because many worthy objectives which an intelligent person may pursue are only tenuously related to size of income. However, a man who does not have a bare survival income probably fits into the classification of those with too little intelligence to have stayed alive in tribal times. In prehistoric eras such a misfit would have been extremely vulnerable to evolution's pruning knife. Both he and his family, if they had been in northern areas during the ice ages, would probably have died of starvation.

The rule that people with small incomes have more children than those of larger incomes is supported by Tables 50 and 51 (see next page) from the 1970 version of the previously cited population study.

Comparing the income of husbands, the 1970 population study shows that in every case the less prosperous outbred the more prosperous.

TABLES 50 and 51

	Children per 1,000 Women	
	White	*Negro*
Wives 35 to 39 Years Old		
With incomes		
$1.00 to $1,999	3,322	4,652
7,000 to 9,999	3,082	3,473
Wives 40 to 44 Years Old		
With incomes		
$1.00 to $1,999	3,328	4,659
7,000 to 9,999	2,975	3,423
Wives 45 to 49 Years Old		
With incomes		
$1.00 to $1,999	3,111	4,278
7,000 to 9,999	2,722	3,091

	Children per 1,000 Women	
	White	*Negro*
Wives 35 to 39 Years Old		
Without reference to husband's income	3,116	3,851
Whose husbands had no income	3,168	3,870
Wives 40 to 44 Years Old		
Without reference to husband's income	3,040	3,893
Whose husbands had no income	3,225	4,103
Wives 45 to 49 Years Old		
Without reference to husband's income	2,803	3,514
Whose husbands had no income	3,027	3,890

As we have said before, the problem is not new, though it is getting worse. Here are the comparable data from Table 37 of the 1960 income figures.

TABLE 37

	Children per 1,000 Women	
	White	*Negro*
Women 35 to 39 Years Old		
Without reference to husbands' incomes	2,664	3,299
Those whose husbands had no incomes	2,905	3,472
Women 40 to 44 Years Old		
Without reference to husbands' incomes	2,550	3,156
Those whose husbands had no incomes	2,860	3,974
Women 45 to 49 Years Old		
Without reference to husbands' incomes	2,377	2,951
Those whose husbands had no incomes	2,785	3,309

The extent of parents' education is probably the best statistical gauge the Census Bureau's population studies gives us for judging parental intelligence, and consequently the best gauge of the heredity transmitted to their children. Since some highly intelligent students leave school at a young age, they must be included in the figures of those with only a few years' schooling. But these categories also include practically all the dropouts who do not have the intelligence to make the grade and whose reproduction rate is of tremendous significance when compared with the reproduction rate of the well educated. The statistics from Tables 40 and 41 of the 1970 population studies

includes only wives aged from 40 through 44 because their families are most nearly complete.

TABLES 40 and 41

	Number of Children Per 1,000 Wives	
	White	*Negro*
Husband and wife, each with less than eight years of school	4,221	5,725
Husband and wife each with four years or more of college	2,914	2,349

If the eight years of schooling were broken down further, we should learn much more about the relative intelligence of the parents. Even in the simple, all-inclusive form given above, however, we are told a great deal. For one thing, the comparisons show that though the whites are breeding down, the blacks are breeding down much faster.

The 1960 figures were similar, as we can see from Tables 26 and 27 below. Since for that year the Census Bureau's classification by ages was different, comparisons cannot be exact.

TABLES 26 and 27

	Number of Children Per 1,000 Wives	
	White	*Negro*
Where husband and wife each has less than eight years of school	3,479	3,510
Where husband and wife each has four years or more of college	1,922	1,315

We see that in 1960, as well as in 1970, uneducated Negroes had almost three times as many children as educated Negroes. For every hundred babies of educated Negro parents, there were 266 babies of uneducated Negro parents. Interestingly enough, educated blacks were reproducing even less than their white counterparts. And they still are.

Bear in mind that these tables report married couples living together. Children of unmarried persons and deserted wives, who would be even more of a burden on society, were uncounted.

One more set of figures from Tables 36 and 37 of the 1970 population studies should complete the message.

TABLES 36 and 37

	Children per 1,000 Women over 50 years of age	
	White	*Negro*
No school year completed	3,658	3,021
Elementary: 1 to 4 yr.	3,668	3,189
5 to 7 yr.	3,047	3,064
8 years	2,635	2,839
High school: 1 to 3 yr.	2,308	2,660
4 years	1,950	2,059
College: 1 to 3 yr.	1,848	1,894
4 years	1,644	1,602
5 or more	1,238	1,233

As the figures in this chapter have demonstrated, we have come to a stage at which the intelligent and more prosperous in this country must spend an ever greater amount of energy, time and money taking care of the less intelligent and the less prosperous. If the trend continues, creative and constructive work may soon become an impossible extravagance. Unless we revise our attitudes toward the "rights" of those who are dragging us under, unless their reproduction rates can be dramatically lowered, the United States will soon follow the pattern set by two earlier—and extinct—Western Hemisphere civilizations: the Mayan and the Incan.

There is no deadlier form of self-destruction than forcing the worthy elements of a civilization to become the servants of the drones.

Chapter 13

A Ratchet for Reproduction

Men are generally more careful of the breed of their horses and dogs than of their children.

William Penn

Of the ancient civilizations that we know about, most have vanished "not with a bang but a whimper." Since their decline and disappearance are chiefly caused by the erosion of the citizenry's mental faculties, this chapter will be devoted to ways and means of reversing this debilitating trend.

As a start, we should remember these two fundamental axioms:

1. Evolution's removal from the gene stream of the less adaptable and less capable was the most effective method of raising man above the other mammals.
2. A civilization's defenses against the brutality of the evolutionary process increase the number of social misfits, who in time destroy what they were insufficiently gifted to create and are incapable of maintaining.

Does a civilization in order to endure have to find a substitute for nature's traditional and successful means of upgrading mankind? We say it does, and we suggest that one such compromise is sterilization.

G. C. Thosteson, M.D., a syndicated columnist, recently publicized a new sterilization technique for women called "band-aid surgery." It is new in that the operation is accomplished by two tiny openings near the naval. One opening is for a light; the other for inserting the surgical instrument, which cauterizes or ties up the fallopian tubes. The openings are so small they require no stitches, just a band-aid. The patient is in the hospital or clinic for only one day and suffers a minimum of discomfort. Some clinics report women have been released a few hours after the operation.

Male sterilization, called vasectomy, has become much more popular because it is even simpler. The *New York Times* (April 4, 1971) reported that in 1970, 750,000 American men were sterilized, adding that today "most vasectomies are performed in twenty minutes in doctors' offices under local anesthesia, without more than a day or two lost from work. In this operation, tiny incisions are made on both sides of the scrotum—and the vas deferens, the tubes that carry the sperm, are cut."

Since sterilization has been approved in many areas of the world as a means of birth control, there is all the more reason to approve it for population control. As a substitute for evolution, it could actually save Western civilization.

Because the "public good" is too abstract an idea to be understood by those who, for the public good, most need to be sterilized, incentives would have to be offered. Up to now, these incentives have been in the negative direction. Those who are a burden on society actually *receive rewards* in the form of additional welfare if they increase the burden! Some of them actually make a business of increasing the burden! Proposed laws for a minimum family income, with no strings attached, will aggravate rather than alleviate the problem. A much more sensible approach would be legislation granting small payments for sterialization.

H. L. Mencken once suggested that men should be given $100 to be sterilized (*American Mercury,* Summer 1937). Something similar has been in effect in the Ernakulam Dis-

trict of Kerala, India (*Family Life,* April 1972). Publicity was lavished on a month-long "Family Planning Festival," which promised a small cash reward, a week's free rations for his family, free transportation to and from the "Festival," and free articles of clothing to any man who attended and allowed himself to be sterilized. More than 63,000 vasectomies were performed.

Mencken thought a $100 bonus would attract the kind of men whose offspring would have a negative effect on society, and that $100,000, would be enough to get the plan underway. He added that "ten or fifteen million dollars would be enough to rescue the whole of Arkansas!"

Many years later Graham French gave a grant to the widely respected Association for Voluntary Sterilization. The fund was too small to permit bonuses, and it was rapidly consumed in surgeons' fees. Later a realtor named Jesse Hartman gave $25,000 to a similar project in Kentucky. Although those in charge of the Kentucky project put its emphasis on environment, not heredity, there was no conflict about the ultimate objective, as the committee's statement makes clear:

> Appalachia's most tenacious and devastating problems are created and perpetuated by the continuous avalanche of babies amidst poverty-stricken families. These unfortunate children are doomed to a life of deprivation. Not only is there not adequate food and shelter, but the most essential elements for emotional growth, such as being wanted, loved and appreciated, are denied them. They are deprived of social, cultural and educational opportunity. These children then have no alternative when they are adult but to join the vicious poverty cycle.

Were Mencken, French and Hartman thinking in terms of a ratchet for reproduction? An automobile jack works on the ratchet principle. Its handle moves up and down, but only the downward movement raises the car.

Evolution had a ratchet effect on human intelligence.

There are favorable births and unfavorable births, but only the favorable births accumulate to make the species more adaptable. The less gifted children simply have no effect because they die early.

Civilization, which brings with it an automatic pardon for evolution's "death penalty for inefficiency," removes nature's control over the low achievers. The result is that inefficiency inevitably triumphs over efficiency—with society the big loser. But individuals also come out badly. They will be represented in future generations, if at all, by descendants of lower intelligence than their own. This is the insidious meaning of the birthrate differential.

Let's consider the case of the exceptional parents who have a high IQ and yet have half a dozen children. Among the half dozen some are likely to be more intelligent, some less, than their parents. Let's assume that three are more intelligent than the parental average. More likely than not, these three will have fewer children than the less intelligent siblings.

Although children will generally have the same median intelligence as their parents, grandchildren will have, on the average, less intelligence. Parents usually think the continuity of their family line is secure if they raise children like themselves. This is likely to be true for only one generation. Their grandchildren by their superior children will almost surely be fewer than the number of their grandchildren by their inferior children. The same rule applies to subsequent generations.

Now let's examine a club or organization in which there are 12 couples quite similar to each other in age, intelligence, education and social status. Altogether these 12 couples have 24 children. Let's assume 8 children are close to the average intelligence of all the club members, while 8 are above that level and 8 below. The question is which group of 8 children will themselves have the most children? If they conform to standard patterns of civilized behavior those below the parental average will have the most chil-

dren; and those above the parental average will have the least.

What all this means is that the social group with whom our children and grandchildren will normally mingle will be less intelligent than our social group. The opportunity for intelligent people to marry intelligent people is lessening every day. Consequently, our children and grandchildren will have a narrower choice of partners.

If the erosion of civilization seems rather distant from our personal interests and social life, the genetic deterioration of our descendants should at least give us some second thoughts.

Consciousness awakened in human beings tens of thousands or hundreds of thousands of years ago, depending on our definition of man. Heredity has renewed that consciousness for countless generations. We are the living representatives of all the members of our family line that have gone before. More important, we represent the sole possibility of life of millions of individuals yet to come, and in our brief stint here on earth we are not only the crucial cog in our own descendants' future, but in the future of mankind. What we do now in our own family will have an effect on the quality of human beings far ahead in time.

It is human nature to look forward to something, something beyond ourselves and beyond the present. The prospect of something better gives us the courage to hold on when the times are out of joint. The well-functioning human being cannot organize himself around any concept that leaves out the weeks, the months and the years to come. Our mind's eye requires the long view.

Survival is biological succession—the continuation of the gene stream that has already carried the gift of consciousness through numberless links in the heredity chain and is ready to carry it through the numberless links to follow. Our own children become the vehicles of self. Our physical and mental characteristics are carried along in their

chromosomes and in the chromosomes that will flow in from other family lines. We should be highly concerned about those "other family lines" with which our own heredity will be merged. To have descendants of substantially less intelligence is not a happy prospect.

And with or without children of our own, for tranquility of mind we have to think of, and prepare for, a social order and a civilization, which we can approve and which will not come with mere wishing. The chaos into which we are drifting points to many generations of misery, stress and hunger. Our goal must be a vast improvement in the problem-solving ability and character of our representatives yet to be born.

In summary, we must actively arrange a future in which the emphasis is on human quality. Then like our ancestors in early Greece and Rome, in the Germanic forests and in the thirteen colonies, we and our posterity will again get busy building a tomorrow that is better than today.

Joseph H. Simons in his book *Gebo, Successor to Man* (p. 93) puts his emphasis on our bodies rather than our minds, but his thinking on heredity deserves attention:

> Medical practice has the ability to preserve the lives and also the capacity for breeding of many who in the absence of medical service would die or at least would not reproduce. If those saved by medicine have genetic defects of body, mind and emotion which can be inherited by their progeny, their preservation without sterilization tends to weaken the genetic stock and increase ills, diseases and defects of coming generations. Nature is always producing mutations and genetic faults but is also removing them by deaths of those having them. If medicine replaces nature in the life span of the afflicted, it must then replace nature in preserving the species and protect its genetic strength.

As a first step toward a biologically sound society, Simons proposes licensing prospective parents (p. 116):

Any married couple can obtain a permit [to reproduce] by request provided they are not in arrears on their taxes, not supported by the state on a dole or welfare, are not convicted criminals, are healthy and compatible, and do not have a serious inheritable fault, defect, disease or abnormality.

There are others besides Simons who have expressed the idea that reproduction should be limited by licensing procedures. In 1973 Roger W. McIntire of the University of Maryland presented one such plan to the Eastern Psychological Association (*Science News,* May 12, 1973). Professor McIntire stresses the fact that the offspring of irresponsible parents get a bad break. He believes the public is about fed up with the miserable prospects of many hapless children and is ready for a licensing law for parenthood which would protect both society and the prospective child.

In regard to the licensing of child-bearing, we might remember how many activities are licensed these days by our federal, state or local governments. Without a license we can't fly an airplane, drive a car, teach in an accredited school, build an office building, operate a beauty salon or even own a dog. If all these activities call for governmental supervision, what about the most important function of all—parenthood?

Jessie Chasko, a California housewife, tackles the subject from a different perspective (*Science News,* July 14, 1973):

[I]t would be ideal if [the reproductive organs of] males and females could be tied off at puberty, and when both parents decide that they want a child, they go through the formality of applying for permission, passing a course in child care, child nutrition and how to love and cherish the child. Having gone through that formality, they would stand miles apart from the thoughtless and drunken conception that now brings rejected children into the world to be persecuted or at least neglected. It is the major, number one disgrace of the earth.

We should bear in mind, however, that proof of intelligence should be included in an application for a license that gives human beings the right to reproduce.

Plans for salvaging civilization, the final subject of discussion in this chapter, can be classified under three headings: (a) licenses to have offspring; (b) elimination of that part of the welfare system that encourages childbearing; (c) new marriage laws. Since we have already touched on (a), the remainder of the chapter will deal with welfare and marriage laws.

The basic point to make in regard to changing the welfare system is that no person who is already a burden on the government or becomes such should receive money or aid to increase the burden. An application for unemployment or disability benefits should certainly include in addition to proof of unemployment, illness or incapability, an agreement not to become pregnant or have children while receiving payments.

The applicant should also agree that if the woman of the family does become pregnant while the family is receiving payments, she must accept abortion at government expense. Also, if the applicant so wishes, he or she can be sterilized at government expense at any time while on welfare.

The promise not to have children should extend for at least three years after the cessation of government payments, so that individuals could not withdraw from the benefits, have a child and then go back on welfare. Moreover, people of child-bearing age who receive welfare benefits should be instructed by the government in the techniques of contraception to insure compliance with the law.

The legal stipulation that those on relief must refrain from giving birth to another generation on relief is justified by the statistics of the Great Depression. Between October 1929 and October 1933 there were 1,612,891 infants born

to families on relief. Those infants constituted 12.7 percent of the total relief roll population, whereas children born in the same period to families not on relief comprised 9.6 percent of the population as a whole. This is one more illustration of the rule that the more irresponsible elements of society have the most children. We must, of course, take care of the unfortunate segment of our population. But to let those who are now a part of the load increase the load, while more prudent citizens delay their marriages and their child-bearing till better times, is social insanity.

The welfare changes that have been suggested by our present lawmakers do nothing to reverse the higher birthrate of welfare recipients. The only practical way to reverse this dangerous birthrate differential would be a marriage law.

Marriage, of course, has always been a matter of concern to the community or state. The *Encyclopedia of the Social Sciences,* in its comprehensive study of marriage, asserts, "Society everywhere limits the choice of biologically possible partners. . . . Marriage until the most recent period has never been primarily directed toward sentimental qualification of the spouses." In various European countries a man had to own a house or a plot of land before he could get a permit to marry. Until recently in this country, many states refused to permit marriages between whites and nonwhites. But today young, inexperienced and even unemployed couples can have as many children as they want (or don't want) with or without benefit of marriage. The interests of society are not even considered, except in the matter of venereal disease.

One reason for Western nations' "decontrol" of marriages and matings was the Industrial Revolution, which stimulated the fragmentation of the social order. Today, the general lack of responsibility toward marriage has reached a new low, as demonstrated by the following letter that appeared in a popular advice-to-the-lovelorn column:

Dear Ann Landers: My boyfriend and I want to get married. Please tell us what states do not require a blood test? We will go to the closest one. We believe a mandatory test is unconstitutional and an invasion of privacy. If people wish to be married without a blood test, they should be able to do so. Thank you.
—100 Per Cent American

Dear 100: You thanked me too soon. Unfortunately a few backward states do not require blood tests, but I won't tell you which ones. Your resentment reflects ignorance. The state is trying to protect people against bringing blind, retarded or dead babies into the world, which is what can happen if a parent has V.D.

Ann Landers, of course, told only part of the truth in her reply. But the public is so starved for information about this subject that half a loaf is better than none.

The following is the proposed text for a marriage law which, the author believes, would appreciably improve the intelligence and health of the American population in a few generations.

WHEREAS, unfavorable differences in birthrates have existed in earlier civilizations and seem to have been a basic cause of their decline, and
WHEREAS, as shown by United States census figures unfavorable differences in birthrates prevail in this State, and
WHEREAS, we believe that both the heredity and the home influences of our citizenry are deteriorating as a result of these unfavorable differences in birthrates, and
WHEREAS, any State, by the nature of its marriage provisions, necessarily determines in large part the heredity and the home influences of its future citizens—

THEREFORE, as this State's Marriage Law, be it enacted:

1. That this Act shall not affect marriages heretofore consummated; that the organization for the law's operation shall be established as soon as efficiently possible and before a date nine months after the passing of this Act; and, that after the

establishment of the Marriage Office all marriages must take place under the terms of this Act.

2. That no marriage have validity without a license issued by the Marriage Office.
3. That the collection of information concerning marriage candidates, the granting of licenses and the keeping of records shall be the fulltime employment of licensing officers so that they can be thoroughly familiar with their duties and their responsibilities.
4. That the licensing officers be on salaries and not on a fee basis, since licensing officers paid by fee might be tempted to grant licenses contrary to the public interest.
5. That no person be given a license to marry unless he or she present ample evidence in an examination conducted by a licensing officer of being well informed in contraceptive techniques. This restriction will be waived if one or both of the prospective marriage partners are sterilized.
6. That no person be given a license to marry except as she or he is suitably employed or has adequate financial means. This restriction is waived if one or both of the prospective marriage partners are sterilized, or if a convincing case be made before a licensing officer that no social burden will result from the marriage.
7. That no person be given a license to marry unless or until he or she presents to the licensing officer a physician's certificate evidencing: (a) that he or she has had a blood test and such other tests as are necessary to disclose venereal disease and that he or she has no communicable venereal disease; (b) that he or she has no other serious contagious or inheritable diseases.
8. That no person be granted a license to marry except as he or she pass a standard IQ test in the 20th percentile or above, and except as he or she present proof of at least four years of satisfactory work in grammar school education or equivalent. This restriction will be waived if one or both of the prospective marriage partners are sterilized.
9. That no person be granted a license to marry, if he or she is a habitual criminal, habitual drunkard, or a drug addict. This restriction will be waived if applicant is sterilized.
10. That no person be granted a license to marry if he or she,

as a result of heredity, is blind, deaf since early infancy, seriously deformed, or insane. Every candidate for marriage will be examined for these defects by an approved examining board, and the licensing officer is forbidden to issue a marriage license except as a favorable certificate from the said board is in his possession. These restrictions will be waived if the candidate for marriage is sterilized.

11. That any unmarried person who engenders a child or is pregnant shall be examined by the licensing officer concerning his or her eligibility for marriage, and if he or she is not eligible for parenthood and if the discovery is within the safe period for the woman, she is to be aborted at state expense. It shall be the duty of any physician or nurse under whose care the person comes, and of anyone else learning of the circumstances, to report such cases to the licensing officer.
12. A pregnant woman entering this state from another jurisdiction must register within one month with a licensing officer and conform with the marriage law except as he or she can show that residence within the state is temporary.
13. That each couple given a license to marry must have stipulated on the license and on the state's record, by the licensing officer, the maximum number of children permitted the couple under the laws of this state. Parents are required to report each child to the officer of the licensing office both six months before it is born and at the time of its birth. After the conception of the final child authorized for the couple, but before it is born, the parents may submit to the licensing officer the records of any qualifications which they think may entitle them to a still larger number of children. If the parents qualify for a larger number, they are to be given, by the licensing officer, a certificate indicating the new maximum. If the parents submit no evidence, or having submitted evidence, still do not qualify for a larger number, they or either one of them, may at that time or later, if they so desire, be sterilized at the expense of the state. In any case, if the wife becomes pregnant after the couple's quota is attained, she is to be aborted at the expense of the State, and both husband and wife are to be sterilized at the expense of the State. In case one of the children has died before the couple's quota is complete, it is not to be counted as part of the quota.

14. That the licensing officer make arrangements for the sterilization without fee of persons for whom it is required or who request it according to the provisions of various Articles of this Act.
15. Couples complying with other legal requirements are to be authorized for reproduction according to the following scale.

IQ Percentile	*Satisfactory completion of school work*	*Standing in class*	*Authorized quota of children*
20	Fourth grade		1
50	Sixth grade	Top 3/5ths	2
60	High school or college	Top 3/5ths	3
70	High school or college	Top 2/5ths	4
80	High school or college	Top 1/5th	no limit

16. There shall be a State Board of Human Genetics composed of three members, each of whom must be well trained in genetics, hold a Ph.D. degree from an accredited institution and must, as prerequisite to taking office, publicly declare his or her approval of the purposes of this law, in the administration of which he or she is to participate.
17. The Board shall appoint the licensing officers and shall oversee their work. It shall keep such records and conduct such studies as it thinks appropriate. Funds shall be allocated to its use for the purposes herein set forth.
18. Persons with socially beneficial qualifications not regularly provided for in the foregoing may apply to The Board of Human Genetics for a higher quota of children than that specified by their IQ and educational attainment. Musical ability, special achievement in the sciences or the liberal arts, in mechanical invention or in organization are to be given special consideration. The Board shall examine each case in view of the employment conditions and the number of special allocations already made, as well as the likelihood of the social benefits to society by the prospective children. The

> Board shall have the power to increase a person's quota although it does not have the power to reduce it. The Board, however, may recommend to the legislature, when it sees fit, any changes in the classifications and quotas which its members believe would be of ultimate benefit to the State, setting forth in writing the recommendations and the reasons for them.

Gradually, it is hoped, people will come to see that the universally assumed "right" to have babies is the right to destroy our civilization. Only when child-bearing becomes a reward, not a right, will large social organizations cease their self-destruction.

A marriage law similar to the one proposed in this chapter will be "a rachet for reproduction" because it will allow upward changes in heredity while preventing any significant shift downward. If such legislation is enacted, parents for the first time in history will be assured that the capabilities of their descendants a thousand years hence will match or outmatch their own!

Chapter 14

The Author Meets His Critics

Youth is looking for new answers—so they can question them.
Walt Kelly

Many questions have probably arisen in the reader's mind as he tasted or, more hopefully, digested the contents of this book. Some of them may have been answered as he read on. Some of them may have not. Because of the controversial nature of his subject matter, the author is well aware that some questions may have been stimulated more by a feeling of hostility than by a desire for knowledge. Consequently, the best way to answer these questions and to relieve the tensions of some of the author's critics is to make this closing chapter an interrogatory, which can also serve as a summary of the book's principal points.

CRITIC: You express repeatedly the dependence of civilization on intelligence. In a general way nearly everybody goes along with that idea now. Why make it such a refrain?
AUTHOR: People don't deny the connection of intelligence and civilization. But they assume that intelligence is well distributed and that stupidity by itself could not be the principal cause of a civilization's failure. I have tried to establish that the rise of civilization is the result of a wide dissemination of problem-solving ability and the fall of civi-

lization is a result of problem-solving incapability. This is another way of saying that civilization is the enemy of evolution. Evolution's modus operandi is selective killing. Civilizations are social organizations which try to protect their members against death or at least delay it as long as possible. Today, the evolutionary process is mostly restricted to people suffering from ill health. But even in this area it has been severely restricted as millions live on who would have died at an early age in prehistoric times.

CRITIC: As I understand you, evolution is the nursemaid of civilization, but civilization hates its nursemaid.
AUTHOR: The intelligence necessary to produce a civilization is a refinement of the brain capacity it takes for human beings to evolve from lesser primates. Without mutations and the culling out of less intelligent individuals, the human species would never have been clever enough to organize the specialized functions that go with civilization. The continuing build-up of primate intelligence by the evolutionary process would have made civilization inevitable because intelligence leads to efficient behavior and efficient behavior is the seed corn of civilization.

CRITIC: You spent so much time on motivations in your early chapters. I never thought you would get to your main theme, why civilizations self-destruct?
AUTHOR: Each chapter is intended to have some part in supporting the subject matter. The conclusions in the later chapters are more convincing because they are anchored in inherited behavior patterns. If we don't understand our subconscious motivations, we are likely to consider our social shortcomings superficial.

CRITIC: In your 1960 book *The Next Civilization* you discussed what you called "Heredity Corporations." Do you still think so highly of this idea?
AUTHOR: Yes, I believe Heredity Corporations have great

possibilities. The greatest weakness of the present social order—and of all civilizations—is the neglect of heredity. As you may remember, the plan for Heredity Corporations depends on artificial insemination, a practice often used in families with sterile husbands. As long ago as 1941 the *Journal of the American Medical Association* surveyed one-fifth of the country's physicians and found 4,049 reported cases of births by artificial insemination. Between 5,000 and 7,000 babies are born by artificial insemination each year according to Dr. Alan F. Guttmacher of the Mt. Sinai Hospital in New York. No doubt the yearly number is increasing as more people learn about this technique.

Heredity Corporations would put artificial insemination to better uses. In the past, many great men died childless or with very few offspring and were, so to speak, lost to the world. To prevent this waste, different types of Heredity Corporations would set up different arrangements for the fathering and raising of children. One type would require that each of its families have at least as many children by artificial insemination from out-of-family great men as by husbands. Imagine a corporation of fifty families with fifty children by husbands in the corporation and fifty children by the contemporary equivalents of: Aristotle, Beethoven, Alexander Graham Bell, Chopin, Darwin, Da Vinci, Edison, Benjamin Franklin, Cyrus McCormick, Michelangelo, Newton, Pasteur, Walter Reed and Shakespeare!

CRITIC: Wouldn't the male members of a Heredity Corporation resent paying for the support of children who are not their own?

AUTHOR: Men sometimes marry widows with children and support them willingly. And adopted children seem to get about the same care as if they were born in the family. Besides, the main purpose of Heredity Corporations is to serve the future—a project which would tend to unite the family by giving it a higher sense of purpose. Moreover, the husband's own children, having grown up with the fifty

offspring of the selected "geniuses," would probably marry among them, so husbands could be confident they would leave as their own legacy to posterity offspring as capable as, or more capable than, themselves. But Heredity Corporations, though they can serve as a bridge to a subsequent civilization, would not be numerous enough or work fast enough to save the civilization we have now. That is why I have not mentioned them in the main body of this book.

CRITIC: Your previous books dealt mainly with the population problem. This time you seem to avoid it. Why?
AUTHOR: I did not avoid it at all. What I have done is emphasize the quality rather than the quantity aspect of population. The truth is the two aspects must always be considered together. In *Population Roads to Peace or War,* which was published in 1945 by the Population Reference Bureau and in its 1947 revision, *Human Breeding and Survival,* published by Penguin Books, Guy Irving Burch and I realized that these two sides of the population problem are practically inseparable.

In my 1951 book *Population on the Loose,* I stressed the point that statistically the problem-makers are also the baby-makers by writing (p. 166): "In pre-civilization days, when the devil took the hindermost, the biological implication of success was survival of one's self and one's kin. But now we save the unsuccessful, and they have most of the babies. Now the biological implication of success is extermination.

In *Sex Versus Civilization* (1967), I wrote that "families on the government dole have more children than the average of the taxpayers who support them" and "among educated people there has never been a population explosion." My earlier books were published when the quantity issue was making some headlines. But then and now most writers on the subject of population have tended to ignore the quality aspect altogether.

CRITIC: Do you think Americans should have more than two children per family?
AUTHOR: No one can reasonably come up with a figure and say, "Americans should have so many children per family." Some should have fewer and some should have more. We must remember that the effects of child-bearing are not limited to the particular family that has the children. Number of offspring should depend on the potential benefit or danger to society. To the extent that it is successful "Zero Growth" gives the illusion that the population problem is being brought under control. Since incapable parents will continue to have more offspring than capable parents, the quality problem will continue to worsen with every "Zero Growth" generation. The marriage law proposed in the preceding chapter is one way to correct the population problem. It would reward merit instead of penalizing it, as present laws do. Unfortunately, in the implementation of the law there is bound to be some injustice, though less injustice than offered by our present system and much less injustice than future evolution has in store for us, if we continue to drift.

In 1968 Dr. Garrett Hardin, president of the Pacific Division of the Association for the Advancement of Science, made a scintillating address entitled "The Tragedy of the Commons." The commons were areas of community-owned land in England, in which any resident of the village could pasture his cattle free. The incentive of each herdsmen was to increase his number of cattle. When the pasture was overgrazed, the effect of too many cows was borne by all of the herdsmen, while the man or men whose additional cows caused the trouble would suffer but little. In the short term, he would actually benefit. Freedom in the use of the commons brought disaster to all. What was good for the individual was not good for the community.

The principle is widely applicable. For instance, if we don't restrict the use of our national parks, Hardin points

out, we invite their destruction. And he shows that pollution of the air and streams works the same way. The group that does the damage suffers with everybody else in the long run, though it profits in the present because the cost is borne by the community.

CRITIC: The Declaration of Independence crystalized the idea that all men are created equal. Isn't your book inconsistent with that doctrine?
AUTHOR: The Declaration of Independence was formulated long before Charles Darwin did his pioneering work in evolution. Thomas Jefferson's lofty words were really meant to convey that the colonists were Englishmen and that Englishmen had attained a measure of self-government which should rightly be extended to their cousins overseas. The findings of Darwin and his successors actually strengthen Jefferson's case for separation from England, though some revision of his wording is in order. The colonists had been through the mill of natural selection as a result of their early hardships and were thus really better equipped for self-government than those who had remained in England.

CRITIC: Polygamy was a common practice in ancient societies. The dominant male frequently had the most offspring, as did the dominant male of many animal species. Doesn't that contradict your statement that less intelligent people always have more babies?
AUTHOR: I never said "always." At any rate my study applies not to people in all situations but to people in civilizations. Polygamy in civilized communities has been the exception. And even in civilizations the rule that the less intelligent half of the population regularly has more than half of the babies does not always apply to small groups. In fact, the smaller the group the less likely the rule is applicable.

CRITIC: Why is it so hard for people to understand that average intelligence is declining?
AUTHOR: Partly because a civilization, in its visible aspects and in its methods, represents an accumulation of knowledge. This knowledge keeps on accumulating even though the problem-solving capabilities are contained within a dwindling segment of the population. We are amazed at the moon landing and the exploration of Mars and think these projects represent the zenith of human intelligence. But *average* intelligence is another story. The moon landing says nothing at all of the increasing proportion of people who are steadily undermining the foundations on which earlier generations have built. The weakness of a civilization doesn't become apparent until the whole structure starts to crumble.

CRITIC: Several writers agree that since the primate stage our forebears have been hunters. Robert Ardrey in *African Genesis* interprets our fierce past as the reason for so much of the violence in movies and TV. Perhaps the greatest enemy of civilization is our instincts.
AUTHOR: The drift of literature as well as of movies and TV toward sex and violence goes along with the reverse action of evolution. As intelligence evolved, interests became widely diversified and violence and sex were a diminishing part of life. But as successive generations obtained their majorities from lower and lower levels of intelligence, the worthier interests are held by an ever smaller number. People who have difficulty with abstract thinking are more directly occupied with instincts. A busy market for the lower forms of entertainment is a consequence.

CRITIC: In a world threatened with thermonuclear war, don't birthrates have a bearing on peace?
AUTHOR: They certainly do. Population growth constitutes a steady push toward international and civil conflict. Anybody who denounces war, if he is consistent, has to be

an advocate for population control. As other countries allow their populations to increase beyond bounds, some "experts" think we will have to do likewise. They are completely wrong. Raising population quality, not population quantity, means less drag on national income, so more funds would be available for building up a more efficient defense force. Also, the higher level of intelligence assured by quality control would promote a better statecraft for avoiding wars or better weapons for winning them.

CRITIC: I am interested in your analysis of egocentricity versus the social appetite. Aren't they equally important?
AUTHOR: They are, but at present the social appetite has reached a state of hypertrophy. By protecting the weak, we save the lives of individuals who cannot do their share of society's work. Concurrently, we are increasingly lenient toward people who prey on other people. We should continue to protect the free loaders—but only on condition that they refrain from proliferating other free loaders.

CRITIC: You have linked kindness with the social appetite and have implied that people have too much of it. You are not going to get much support by knocking what most people consider to be a virtue and a religious duty.
AUTHOR: What I am criticizing is not kindness but blindness in kindness. Being kind without limits is being socially injurious rather than socially beneficial. A century ago John Stuart Mill had this to say about charity, which is kindness in action: "As for charity, it is a matter in which the immediate effect on persons directly concerned, and the ultimate consequences to the general good, are apt to be at complete war with one another."

Kindness is a paradox. We probably could not have a civilization without it. Indeed, many people consider it the very essence of civilization. Yet kindness with no restraints on reproduction leads directly to a civilization's collapse.

Only if we increase human quality, can we render and receive kindness without the present disastrous side effects.

CRITIC: Why are there often conflicting attitudes about charity even among people who seem to be of the same social level—within the same chamber of commerce, the same golf club, even the same church? One man will favor a specific charity and another will oppose it. Why does charity frequently have such a marked effect on people's blood pressure?
AUTHOR: Usually the difference of attitudes reflects a difference of knowledge about the effects of charity. Those who are aware that charity with no strings attached is really antisocial will realize the importance of strings.

CRITIC: Incidentally, do you contend there is something original in your argument that our mental abilities and our psychological makeup are heavily dependent on heredity?
AUTHOR: No, but it has been so unpopular for the last forty years that the environmentalists and "nurturists" are now running the show. Only recently have the hereditarians been coming out of their holes. Tom Alexander in *Fortune* (October 1972) has an excellent article "The Social Engineers Retreat Under Fire." He tells of a number of developments which give us hope that serious studies of human and animal behavior are breaking through the suffocating taboos imposed by the social scientists who worship the equalitarian and environmental viewpoint. But don't think the truth will have an easy time of it. As Alexander sees it, anyone who questions the pet theories of the environmentalists "finds himself attacked with a virulence unprecedented in scientific circles since the days of Galileo."

Alexander lists a few of the brave men now battling the antiheredity establishment and who somehow manage to get published. Edward C. Banfield, Harvard political scientist and author of *The Unheavenly City,* is one of them. Ban-

field classifies people according to interests and finds they differ in the degree of their orientation "to the future." There is, of course, a high correlation of intelligence with such an orientation. But Banfield errs, along with his major critics, in aiming all his lightning against prevailing social and political values, and none against the genetic deterioration.

Robin Fox and Lionel Tiger, anthropologists at Rutgers University, have written *The Imperial Animal.* They conclude that man's mind, like his body, is influenced by millions of years of tribal environment organized for hunting and defense. What they are really saying is that much of our behavior was genetically fixed millions of years ago in the course of our remote ancestors' adaptation to hunting as a basic way of life.

Arthur Jensen of the University of California has seriously criticized academia's currently held assumption that races are equal in intelligence. He asserts the fifteen IQ points by which blacks trail whites is mostly a result of inheritance.

Richard Herrnstein, the Harvard psychologist, has compared upper-class and lower-class IQs and discovered that the former are higher. Herrnstein's work parallels that of Bruce Eckland, a sociologist at the University of North Carolina, who had earlier analyzed status-determined intelligence differences in the *American Sociological Review.*

CRITIC: It is hard to believe you when you say that the Cro-Magnon people were, on the average, more intelligent than the people of today. They lived like savages.
AUTHOR: What proportion of your friends have enough intelligence to make leather tie-strings for a bearskin coat, or bind a sharpened stone to a stick to make an ax? How would you carve an artistic design on a bone? Without metals, even the Cro-Magnon Edisons and Plancks had to live crudely.

CRITIC: I understand that Nobel laureate William Shockley, the co-inventor of the transistor, has been trying for years to get the National Academy of Sciences to conduct a research project to determine whether or not "retrogressive evolution" is occurring in the United States. Isn't retrogressive evolution what you have been writing about?
AUTHOR: It is; and Shockley's name for it is very appropriate. Indeed, the Census Bureau has been lifting the curtain on "retrogressive evolution" just about every time it goes about the business of accumulating vital statistics. As for the National Academy of Sciences, it is behaving as if it is afraid of the truth. We might remember Louis Pasteur, the French scientist, who discovered that disease is carried by germs and who invented a number of antitoxins. He was opposed by almost the whole medical profession. We have a replay of Pasteur's experience in the struggle of Dr. Shockley with the National Academy of Sciences.

CRITIC: A high-ranking geneticist has said: "We want the human genotype to improve and this must come about through differential fertility. The trouble is that all the eugenic programs so far have failed because they were oversimplifications. We still don't have enough information to establish a workable system." I suppose you would disagree.
AUTHOR: We have plenty of information about breeding animals. Evolution takes hundreds of thousands of years to get results comparable to what animal breeders obtain in a few decades. As to oversimplification, a simple system is likely to work best. The difference between improving the breed of animals and improving the breed of human beings is that for human beings we have to set up incentives.

CRITIC: In the long run aren't you, with all your comments, proposals and projected laws, interfering with freedom?"

AUTHOR: Freedom never is, never has been, and never could be an absolute. The individual always finds it necessary to accommodate to other individuals. The denser the population, the more people have to accommodate to other people. Since population itself becomes a problem, restrictions on reproduction become necessary to prevent every large city on earth from becoming another Calcutta.

As to many other socially imposed limitations on freedom, most people don't think twice about them. The man who is drunk is not allowed to drive a car, and may be jailed for doing so. Very few people object to this curb on freedom. Neither do they object when a man is put away for a year or two for stealing a car.

A woman who becomes pregnant while on welfare and who has half a dozen children and no husband is doing a lot more harm to society than the average thief. The evil she does lasts long after her death. Our civilization itself is imperiled by her behavior.

Intelligent people are likely to understand the necessity to limit freedom although they sometimes grumble at certain types of interference. On the other hand, unintelligent people usually resent any and all regulations and restrictions which affect them directly. But if we don't have regulations, we have anarchy and have to put double locks on our doors. As the population increases, we lose a certain amount of freedom either to government or to nonconforming individuals or both. However, a society with a high proportion of responsible people will need fewer regulations and laws than a society of irresponsibles.

CRITIC: If the less accomplished half of the population were prevented by marriage laws from having enough children for their own replacement, wouldn't there be a rapid decline in the country's total population? The top half hardly replaces itself now.

AUTHOR: There would be no decline in the total population unless people were convinced it was for the country's benefit. The adoption of the marriage laws would put the quietus on the mischievous slogan that all men are innately equal, while offering an incentive for highly qualified people to have as many children as the laws would allow.

Today the goals of our most capable people focus on an expensive car, a diploma, writing a bestseller or an address before a learned society. Bringing children into the world receives no status points at all. In fact, children now get in the way of activities that win social recognition.

When the number of children in a family is evidence of parental merit—as provided for in my proposed marriage law—children would be status symbols. Present birthrate differences would then be reversed.

CRITIC: You passed rather briefly over the work of Tenny Frank, who stressed the effect of immigration on a country's future. Doesn't the point deserve more discussion?

AUTHOR: It certainly does. The American Tenny Frank in *Economic History of Rome* and the German Otto von Seeck in *Downfall of the Ancient World* both did topflight work in the area of immigration. However, by centering their attention on the negative influences of alien peoples, they diverted attention from the basic aspect of the problem—the domestic birthrate. Why, we might ask, were immigrants from Greece and the Middle East incapable of carrying on Roman civilization? Their mother countries had once been beacon lights of human creativity. The answer is that in each of those countries the less capable half of the population had, in every generation, produced more than half the offspring. Consequently at the time immigrants were swarming into Rome, the intelligence level in their homelands was way below the high average of earlier times. And, of course, this inferior influx had a negative effect on Rome's survival.

CRITIC: I wonder if you saw a network TV program entitled *The IQ Myth.* It contradicted many of the ideas behind your proposed marriage law.
AUTHOR: The program's title was more disparaging than the program's content, which admitted there was at least some substance to IQ testing, insofar as it helps determine a student's learning capability and the speed at which he can absorb formal education. Although generally hostile to the whole concept of grading intelligence, the program did not present any alternatives. If IQ testing in schools is eventually halted, the results will probably be an accelerated decline of academic standards.

CRITIC: If birthrate differences can explain why civilizations disintegrate, do they also explain why an increasing proportion of our taxes must be allocated to education?
AUTHOR: Disproportionate birthrates account for much of the increasing cost of education. As average intelligence declines, students have more difficulty learning, have less interest in learning, and more and more of them are getting a poorer start at home. Birthrate differentials also explain the increase of crime, the higher cost of welfare, our international problems and the blundering performance of government at every level.

CRITIC: Coming back to your marriage law, you build it almost entirely on intelligence. What evidence do you have that intelligence is inherited?
AUTHOR: Intelligence has inherited brain cells as its very basis. Recent research presented by Dr. Joseph Hunt to the First International Congress on Twin Studies at Rome, 1974, "clearly shows that individual differences in intelligence among individuals in Western cultures are primarily determined by genetics. . . . IQ scores of adopted children are much more closely similar to, or identical to, their biological mothers—whom they never saw—than to the

scores of their adoptive parents." This statement, which appeared in the *National Observer,* agrees with the long-standing evidence provided by the IQ scores of separated identical twins.

Our present aid programs discriminate very heavily in favor of reproduction by persons who are low achievers. If we don't do something about this soon, things will get much worse. We don't have unlimited time to work out complicated rules for reproduction according to individual accomplishments. IQ is the best simple test we have. Later we can work out suitable refinements. We should not worship IQ, but we should respect it.

CRITIC: In view of the present climate of public opinion, isn't there very little chance that a majority of voters will agree with any of your proposals?

AUTHOR: When the federal government's funds run low, when the taxpayers' protests grow louder, when irresponsible government borrowing leads to runaway inflation, people will become increasingly disturbed and elect congressmen who will eventually have to give emergency powers to the president. He will then be able to enact executive orders that welfare payments be given only to persons who volunteer to be sterilized or promise not to have more children than permitted by their respective quotas. I originally intended my recommendations for the states, but I see no reason why they wouldn't work nationally. Once in operation, their benefits would be clear.

Also you must remember that the proposed law in no way affects "marriages heretofore consummated." Since the majority of voters are already married, they might support a marriage law that is inapplicable to them, yet would serve the country as a whole.

CRITIC: You say that the self-destruct principle has been responsible for the death of all previous civilizations. How can we possibly expect that it won't doom our own?

AUTHOR: Until now it has never been recognized as a principle. The great minds of the past have rarely given attention to human breeding and survival. So many environmental factors seemed to require immediate attention that the scholars were sidetracked. Now, with trouble ahead for everyone, and with the cause of the trouble defined, they will have to meet the situation head on.

CRITIC: In the final analysis, how would you assess the prospects of our civilization?
AUTHOR: Unless we act swiftly, it will grind to an agonizing end. But since nothing is more important than preventing the collapse of the social structure in which we live, however slim the chances of saving our civilization may be, we still have to try!

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THE AUTHOR

Elmer Pendell, one of the world's foremost population experts and the holder of a Purple Heart and a Distinguished Service Cross, acquired his B.S. at the University of Oregon, M.A. at the University of Chicago, LL.B. at George Washington University and Ph.D. at Cornell.

Dr. Pendell's teaching career has included posts at the Universities of Nevada, Arkansas and Oregon, as well as Jacksonville State University and Cornell. His central life-long interest has been rates of human propagation and their influences on environment. As co-author of *Society Under Analysis, Population Roads to Peace or War* and *Human Breeding and Survival,* and author of *Population on the Loose, The Next Civilization* and *Sex VERSUS Civilization,* he has worked long and brilliantly on both short-term and long-term solutions to population problems.

In this latest and by all means his most significant book, Dr. Pendell plows into the crucial demographic phenomenon of our age—the accelerating decline of our institutions and our way of life caused by the higher reproduction rates of those who should reproduce least. Perhaps his most important contribution to modern thought—a contribution which comes through strongly in this volume—is his linkage of the inherited social drives of individuals to the universal tolerance extended to socially intolerable birthrate differences.

WHY CIVILIZATIONS SELF-DESTRUCT

Dr. Pendell's book is of major importance because it explains more simply, more clearly and more accurately than any other work the reasons for the decline not only of our own civilization but of all previous civilizations. Advance readers have had the following to say about this penetrating study of human genius and human folly.

Dr. Charles C. Josey, former Chairman of the Psychology Department of Butler University: *A major contribution to sound thinking regarding the most important problem confronting mankind.*

Dr. Max Rafferty, Dean, School of Education, Troy State University: *Eminently readable. I like it tremendously.*

Lt. Gen. Edward M. Almond (ret.): *Having read the manuscript with great interest and profit, I can truthfully say that I feel vastly more aware of the cause of civilization's fall, as well as the means of saving our own.*

Bill Nichols, member of Congress: *I am impressed with your analysis.*

Dr. Jacob O. Kamm, author, former President, Baldwin Wallace College: *Timely; a worthwhile book.*

William G. Simpson, scholar and author: *Your idea is absolutely basic to any civilization's survival.*

Albert P. Brewer, former Governor of Alabama: *Very interesting and thought-provoking.*

Dorothy Boicourt, poet: *I hoped your latest book would be your greatest. It is.*