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the controversial bestseller by ROBERT ARDREY

AFRICAN GENESIS

A Personal Investigation into the Animal Origins and Nature of Man

an essay in atheistic evolutionism

Starting point – territoriality not sexuality – motive of [illegible] at [illegible].

Lebensraum – Drang nach Osten.

Britannia = ~~Rule~~ Deutschland über Alles – Horst Wessel.

– also salesmanship – Stalin. 49.

Marxian criticism dismissed as romantic illusion + optimism.

Note Stalin's pessimism about man. + Hobbes.

Standpoint taken up for the observation of a phenomenon plays a considerable part in the phenomenon itself.

+

Dramatic foundation & myth.
as in destroying myth sets up a counter-myth.
vibrant with romanticism (claiming to be anti-romantic)

(transitional carnivorous armed hunting, erect walking ape man —) the "killer ape"? man emerged because he was a killer. The weapon had fathered man?

Prove our ancestry down from Adam to Cain.

anthropology for Ayn Rand readers.
'disastrous consequences of applying stern logic to a false premise' true. And of applying too much inspiration to a true premise
"Romantic fallacy" — that war is bred by social conditions & that if we can change society we can get along without war. "truth" – we are killer apes.

In myth making. contrast Rachel Carson
man's pristine nobility – "sold at box office"? his pristine depravity never so
"the maintenance & defence of territory is the chief characteristic of primate society." 162. biological determinism. replaces economic etc.

romantic lang. – 21 'only science in the world'! 33

mythopoeia – 21. 22. 27

chatty, digressing autobiographical style not convincing – more attention to the tone & gestures of the speaker than to the points he is trying to make.

Teilhard de C. upon Africa was the first site of man's life 179

Viva la muerte! (at Unamuno's speech)!!

AFRICAN GENESIS

Robert Ardrey

A Personal Investigation into the Animal Origins and Nature of Man

Drawings by Berdine Ardrey

A Delta Book 1963

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The role of territory in general animal behaviour lies today beyond scientific controversy; then it was unknown. We of the Class of 1930 had to emerge into a world of tumultuous evaluation without benefit of this most salient observation. Similarly, we could not know, as we bemused ourselves with the attractions of the classless state, that hierarchy is an institution among all social animals and the drive to dominate one's fellows an instinct three or four hundred million years old.

There is a classic experiment which may be performed with sword-tails, those darting red fish that decorate many a tropical tank. Half a dozen male swordtails gathered together in a tank will rapidly arrange themselves in a straight-line hierarchy, each through strength and pugnacity and determination finding those he may dominate and those to whom he must submit. His rank determines many a prerogative, whether access to food or to females or to an undisturbed corner of the tank, and his defence of that rank will remain his most belligerent preoccupation. Just how profound is the instinct for dominance in the swordtail may be tested most simply. Let the water in the tank be gradually cooled. The time will come when the male will lose all interest in sex; but he will still fight for his status.

We of the Class of 1930 could not know of the experiment with swordtail fish, for it had not yet been performed. And it would be almost ten years before the head of my own zoology department at the University of Chicago, Dr. W. C. Allee, would publish his *Social Life of Animals* and establish the thesis, today no matter for controversy, that dominance in social animals is a universal instinct independent of sex. By that time, however, I was a practising playwright no longer *au courant* with what the natural scientists were up to. Any convictions which I may have held concerning such human tendencies as tyranny, aristocracy, or keeping up with the Joneses had been formed without knowledge of the ways of my animal ancestry.

Many were the unblemished fallacies that the well-educated young man of my generation took with him into a rambunctious world. From the time of Darwin, for example, it had been assumed by science that man evolved from some extinct branch of happy apedom not radically different from contemporary species. No assumption could have been more reasonable, since without exception every modern primate, whether gorilla or macaque, chim-

panzee or vervet monkey or gibbon or baboon, is inoffensive, non-aggressive, and strays no farther from the vegetarian way than an occasional taste for insects. And so our psychology, sociology and anthropology professors had no reason to believe that the human ancestor led a life less bland. Yet within a decade African palaeontologists would demonstrate beyond doubt the presence on that continent of a race of terrestrial, flesh-eating, killer apes who became extinct half a million years ago. Within another decade the human emergence would be demonstrated as having taken place on that continent at about that time. And the final decade of the contemporary revolution would establish the carnivorous, predatory australopithecines as the unquestioned antecedents of man and as the probable authors of man's constant companion, the lethal weapon.

We, the approximate Class of 1930, today furnish trusted and vital leadership to world thought, world politics, world society and to whatever may exist of world hope. But we do not know that the human drive to acquire possession is the simple expression of an animal instinct many hundreds of times older than the human race itself. We do not know that the roots of nationalism are dug firmly into the social territoriality of almost every species in our related primate family. We do not know that the status-seekers are responding to animal instincts equally characteristic of baboons, jackdaws, rock cod, and men. Responsible though we may be for the fate of summit conferences, disarmament agreements, juvenile delinquents and new African states, we do not know that the first man was an armed killer, or that evolutionary survival from his mutant instant depended upon the use, the development, and the contest of weapons.

We do not know these things, since they are conclusions to be drawn from the contemporary revolution in the natural sciences. We should know, however, that acquired characteristics cannot be inherited, and that within a species every member is born in the essential image of the first of its kind. No child of ours, born in the middle twentieth century, can differ at birth in significant measure from the earliest of *Homo sapiens*. No instinct, whether physiological or cultural, that constituted a part of the original human bundle can ever in the history of the species be permanently suppressed or abandoned.

The ineradicability of a cultural instinct finds a fair example in

the history of beavers on the River Rhône. A beaver colony creates its dams and ponds and lodges by communal effort, and does so only when the numbers of its society are at moderately full strength. From ancient days the European beaver was hunted for its fur until it very nearly became extinct. A few stragglers hung on in a few tiny colonies, but they built nothing. For centuries beaver dams were unknown in western Europe. Then the French government extended protection to a scanty beaver population in the Rhône valley. Slowly, through several decades, their numbers grew. And at last the beavers went back to work. For the first time in many hundreds of years dams and ponds and lodges appeared in the tributaries of the River Rhône. And they differed in no least degree from the dams and the ponds and the lodges built five thousand miles away by distant Canadian cousins.

The problem of man's original nature imposes itself upon any human solution.

I have attributed the silence of the contemporary revolution to the distractions of our time. Yet so brilliantly is every modern circumstance illuminated by the revolution's flares, that the reason seems inadequate. I have attributed the silence to the obscurity of such highly specialized scientific findings; yet the even more specialized endeavours of the nuclear physicists have scarcely gone unnoted. I have attributed the silence to the newness of the revelations, and lamented an educated generation born too soon. Yet the approximate Class of 1960, thirty years later, emerging from its respectable universities as respectably well-educated as were we, has been taught not a whit more.

The contemporary revolution in the natural sciences has proceeded in something more striking than silence. It has proceeded in secret. Like our tiny, furry, squirrel-like, earliest primate ancestors, seventy million years ago, the revolution has found obscurity its best defence and modesty the key to its survival. For it has challenged larger orthodoxies than just those of science, and its enemies exist beyond counting. From seashore and jungle, from ant-heap and travertine cave have been collected the inflammable materials that must some day explode our most precious myths. The struggle towards truth has proceeded, but as an underground intellectual movement seeking light under darkest cover.

Is man innocent? Were we in truth created in the image of God? Are we unique, separate and distinct creatures from animalkind?

Did our bodies evolve from the animal world, but not our souls? Is man sovereign? Are babies born good? Is human fault to be explained successfully in terms of environment? Is man innately noble?

The contemporary revolution in the natural sciences, unorganized, undirected, and largely unrecorded, has with a strong instinct for survival challenged the romantic fallacy in a voice unlikely to be heard. When a strident voice from southern Africa has repeatedly lifted itself in challenge, science itself, as we shall see, has unwittingly combined to mute, to divert, or to discredit the call.

A certain justification has existed until now, in my opinion, for the submission of the insurgent specialists to the censorship of scientific orthodoxy. Such higher bastions of philosophical orthodoxy as Jefferson, Marx, and Freud could scarcely be stormed by partial regiments. Until the anti-romantic revolution could summon to arms what now exists, an overwhelming body of incontrovertible proof, then action had best be confined to a labyrinthine underground of unreadable journals, of museum back rooms, and of gossiping groups around African camp-fires.

For six years I have lived with that underground. Why a dramatist should have become the accountant and interpreter of a scientific revolution is a paradox that need not divert us here. The rare reader who finds himself unbearably curious is invited to turn to Chapter Seven and to get his impatience over with. What need only concern us at this point is that a dramatist is a specialist, in a sense, in human nature. In another sense, however, he is a specialist in nothing, and therefore a generalist. And while the generalist may be the most suspect of creatures in the view of the modern, specialized human animal, a generalist was what a revolution of specialists demanded. And a generalist was what it got.

For the tasks of this account, I have brought a fair experience with the human condition; the innocence of the Class of 1930; a willingness to trade the theatrical posture of the playwright for that of the audience; and no too great disinclination for adventure. Departing from theatrical procedures, I have been a touring, one-man audience on an endless series of one-night stands. I have listened to geologists, ecologists, and zoologists in America; anthropologists, palaeontologists, and meteorologists in London; archae-

ologists, anatomists, and biologists in South Africa; primate specialists in Central Africa, reptile specialists in California and the Transvaal, mammal specialists in Pretoria and Nairobi, game wardens in the vast reserves of Uganda, the Congo, South Africa and Kenya. And everywhere, surprisingly, I have been welcome. I have been entertained by old foetuses, and older bones. I have been dragged through limey caves; I have beheld peculiar animals; I have drunk more tea than I can mention. Why a prowler as suspicious as myself should have been received with such kindness, I do not know. Perhaps a generalist was what these specialists yearned for. Or perhaps they were merely lonely, and there was no one about but myself.

In any event, it is a dramatist who must first record, synthesize, interpret and evaluate a scientific revolution striking deep at the human circumstance. And the man of science, confronted for the first time by the arrayed achievements of the various specialized natural sciences, must be tolerant of the dramatist lurking behind the pages: the weakness for lights and shadows, for mystery and irony and situation and adventure, for the rude joke or the great story. Similarly the general, informed reader, for whom this book is written, must tolerate the scientific discipline lying upon the dramatist. He should recall that much of the material, as unfamiliar to the scientist as to himself, must be presented with authority and detail. He should recall that the psychiatrist, for example, faced with scientific evidence casting doubts on certain of his profession's premises, will demand degrees of proof for which the general reader will not ask.

All readers, lay or professional, confronted by a new interpretation of man's origin and nature, must be obliged continually to ask the question: Why should I believe this? To aid the reader in this evaluation, I have arranged the material according to its order of controversy. In the remainder of this opening chapter I present a brief history of the contemporary revolution. I then proceed through following chapters to present those factors of animal behaviour which, unassimilated though they may be by modern thought and undigested by orthodox science, still lie beyond authoritative dispute. And I analyze the romantic fallacy in terms only of the indisputable.

To that point, none of the material presented in the account can be regarded as today controversial within the ranks of advanced

specialists. Beyond that point, however, we encounter the stormy channels of our African genesis, and the final animal mark on man. Here the disagreement of specialists has in the past been the rule. The discovery on July 17, 1959, of a single fossil skull near the bottom of a dry gorge in Tanganyika's dusty Serengeti plain, leading undoubtedly to new discoveries, new riddles, and new controversies, should at least end most of the old ones. I choose in any event to regard all material relating to man's predatory origins as essentially controversial, demanding special investigation, special evaluation, and special proof. And so, before the reader is presented with a final interpretation of the contemporary human predicament in terms of our total animal legacy, he may judge for himself that portion of our legacy on which not all specialists yet agree.

3

Previous to 1930, only two scientific cries heralded the revolution to come. One came from South Africa, from the throat of a clamorous Australian anatomist. This challenge was universally rejected. But the other cry, with which we begin our story, was in fact a quiet statement from an English bird-watcher, and it was widely heard, widely accepted, and widely misunderstood. It nevertheless marks the opening of the contemporary revolution in the natural sciences.

Eliot Howard was the English bird-watcher. Until 1920 he possessed a narrow fame as supreme authority on the British warbler. But then he published a book called *Territory in Birdlife,* and there will be small hope for a United Nations that fails to take account of his work. For what Eliot Howard had observed throughout a life-time of bird-watching was that male birds quarrel seldom over females; what they quarrel over is real estate.

So far as I know it was Howard who introduced the term, *territory,* to zoology. In the 1860's a German scientist named Altum had recognized that the notion of males competing for females—at least among birds—was an error of observation. The English bird-watcher, however, knew nothing of Altum's work, and I find no evidence that the German's radical observation had the least

impact on scientific thought. But Eliot Howard's pronouncements were another matter. With infinite detail and infinite patience he observed the pattern of bird competition. Rarely did males compete for females. Instead, the male seizes a territory. He defines its boundaries by the pugnacity of his individual nature, and warns away all others by his song. On this territory he will mate and breed, but the seizure and struggle take place before the coming of the female and without consciousness of sexual significance.

What Eliot Howard had done, of course, was badly to upset Darwin's "law of battle", and to introduce into scientific thought the possibility that in evolutionary progress the romantic struggles of sexual rivalry might not be the beginning and end of all things. A superb naturalist—and a realist uninfluenced by any temptation to project the supposed nature of man on the supposed conduct of animals—the British bird-watcher studied species after species, migratory birds and resident birds, land birds and sea birds. And always there was the same conclusion, that a male bird who has acquired his territory will have small problems in gaining or holding a female.

Farther along in the account of the new enlightenment we shall consider the enchanting details of Howard's work. What need concern us now is simply that in the 1920's Howard's theories were accepted by most authorities as a remarkable characteristic of bird life alone. Birds had funny ways. By the 1930's, however, it was becoming evident in many an obscure scientific paper that it was not just birds.

A growing host of naturalists were going out to field and sea, to Siam and to Panama and into the Congo fastness, looking all of them about with a hard, new eye. Lizards, jewel fish, seals and muskrats revealed the same primary passion for a place of one's own. One cannot say that the urge to seize and hold a territory was unveiled as some universal law of life. Many a species showed sleepy indifference to the problem of *lebensraum*: But what could not be denied was that in vast segments of the animal world natural selection of the most qualified individuals took place not by competition for females but by competition for space.

It was an astonishing discovery, well worthy of headlines. But no headlines appeared. In the later years between the wars our attention was being diverted by the more dramatic endeavours of

economic depression and militant nationalism. A scientific thesis the overtones of which lent support to the defenders of private property could scarcely, in such a time, be considered popular reading. Similarly, we were most of us during that period convinced that wars were made by munition-makers; and we saw no reason to look into the matter more deeply.

But work progressed in its silent way. An American zoologist, Dr. C. R. Carpenter, brought matters perilously close to home. His patient studies of ape and monkey societies in a state of nature are classics of modern science. And they show that among our closest relatives territoriality is a universal law. Even more important, they reveal the inner workings of that more sophisticated institution, the social territory—one held and defended by a group. It was Dr. Carpenter's work that inspired the grand old man of British anthropology, Sir Arthur Keith, to make one of the few political deductions so far published on the subject. In his last essays Keith reflected that if one seeks the origins of nationalism, of patriotism, and of war, one need look no further than to territoriality.

I should suggest today that Sir Arthur writing in the mid-1940's spoke too soon. The more recent revelations of our African beginnings have contributed factors more starkly terrifying than simple territoriality to the animal instincts directing our behaviour. In contrast, the drive to gain and defend a territory, even to live in undying hostility with one's neighbours, must be interpreted as we shall see as a conservative force in the broad panorama of species.

Eliot Howard's observations of birds upset the time-honoured assumption that the male animal has little on his mind but females. Many a zoologist today, after a generation of accumulated studies, will flatly assert that the territorial compulsion is more pervasive and more powerful than sex. But the observations of a revolutionary generation revealed that it was not just territory, either. The chief target of such zoologists as Carpenter and Allee, and of such naturalists as Konrad Lorenz and Eugène Marais, was animal society. Investigations revealed the obligatory dependence of territorial defence upon social order, and the exquisite relationships of social order to acceptance of responsibility by the dominant hierarchy, to acceptance of domination by the rank and file, to group defence of the individual and the young, to division of duties and communication between social partners, to the

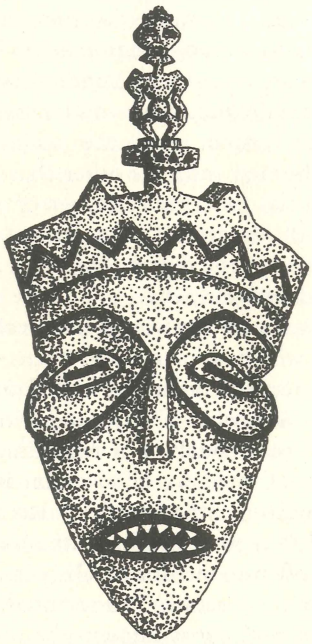
minimizing of sexual conflict, to the development of a dual code of behaviour—amity for the social partner, hostility for the territorial neighbour—and to the enlarging role of the female as sexual specialist to counteract the tendency of social males to be preoccupied with activities other than reproduction.

Man is a primate. All primates are social animals. As social animals, all primates have developed to one degree or another such instinctual bundles as guarantee the survival of their societies. There is no reason to suppose that man in his African genesis inherited from primate ancestors a bundle less complex. It will be worthy for you to recall when next you transport your troubles to the psychoanalyst's couch, that the science of Freud's day acknowledged no human instincts other than sex and individual survival, and no social inheritance larger or more complex than the family group. If you are encouraged to believe that all your troubles can be traced to the repressions of sex and family relationships, then this is the reason why.

Two basic discoveries have powered the revolution in the natural sciences. One—to which we shall now turn—was that the main stage for the dramatic emergence of man from the animal world was the continent of Africa. The second—inspired by a British bird-watcher—was that conclusions regarding animal behaviour are valid only if confirmed by observation in the wild. Freud's generation knew nothing of the broader patterns of animal instinct, because science of that time confined its observations to captive animals. And zoos offer no territories. Only in a state of nature can we be sure that we are observing true animal behaviour. If today we say that almost nothing is known about the much-observed chimpanzee, then what we mean is that almost nothing is known of his behaviour in a state of nature. Modern zoology is building as rapidly as it can a new knowledge of the animal based on Eliot Howard's inspiration and Dr. Carpenter's techniques.

Unrelated though the two basic discoveries may seem, still both lead the natural scientist to the opportunities and hazards of the African continent. Here the palaeoanthropologist works against time to unearth the fossil history of man's beginnings. And the zoologist, drawn by the last vast reserves of wild life remaining on the planet, works also against time to learn what he can of our animal ways, while still he may. On a magnificent, awesome, natural stage both wings of the contemporary revolution meet and

encounter a third revolutionary force, one with consequences ironically dovetailing their own. The African independence movements are rapidly converting a continent into something approaching a political state of nature, where primitive human behaviour may be observed not as we should wish it to be, but as it is.



I had the opportunity in 1960 to experience with both scientific wings, in the same portion of the African arena, the impact of the new force. Two of the most significant primates, in terms of human behaviour, are the gorilla and the chimpanzee. But as almost nothing is known of the chimpanzee in the wild, so almost nothing is known of the gorilla. And so, since I had been able to find little trustworthy scientific literature on gorilla behaviour, I went early in the month of June to a village named Kisoro on the Congo-Uganda border. Above the village is a towering volcano with bamboo forests still sheltering a few of the vanishing mountain

gorilla. And in the village is a tiny hotel called Travellers Rest, dedicated to madmen and scientists. While no literature may yet exist on gorilla ways, at the hotel dining table and nowhere else in the world one can at least hear gorilla gossip.

The area about Kisoro marks the little-known hinge of the African continent. A hundred miles to the south lies blue Lake Kivu, a hundred miles to the north rise the misty, legendary Mountains of the Moon. A hundred miles to the east spreads sprawling and enormous the cynically smiling face of Lake Victoria, poisonous with disease, crawling with crocodiles, the probable focus of our earliest human experience; while off to the west into the Congo march the volcanoes, three miles high, peak after perfect, symmetrical peak. For several weeks I lived not only at the hinge of Africa, but at the heart of the contemporary revolution. Just beyond Lake Victoria, in Tanganyika's Olduvai Gorge, Dr. L. S. B. Leakey and his wife excavated from sunrise to sunset for further remains of the dawn creature, *Zinjanthropus,* which they had discovered the previous season. And high on a saddle between two peaks a few volcanoes to the west perched Dr. George B. Schaller of the New York Zoological Society. For a year he had been living with the mountain gorillas, and his reports when they are published will constitute our first, only, and for the time being last authoritative observation of gorilla behaviour.

On the thirtieth of June—the Congo's Independence Day—my wife and I left the border. Dr. Schaller was still on his Congo perch.

4

When I was a boy in Chicago I attended the Sunday School of a neighbourhood Presbyterian church. The church is gone now, a victim I must believe of wear and tear. It was a wonderful Sunday school. A modern critic might demur on grounds that it did nothing for juvenile delinquency other than to bring it indoors. But I cannot share such a view. My class met not only on Sunday morning but on prayer-meeting night too, and I recall our Wednesday night meetings with the simplest nostalgia. While in the church above the more devout adults of our congregation would

be gathering for quiet song and prayers, we would meet in the basement. The meeting would as a rule be of a business sort given to sport programmes and reports, collections and the like. A new member or two would be initiated, and if injured seriously helped home to his mother. Then the meeting would close, always with the same devotions. There would be a short prayer, and a shorter benediction. And we would turn out all the lights and in total darkness hit each other with chairs.

It was my Sunday-school class in Chicago, I believe, that prepared me for African anthropology. North of the equator the contemporary revolution has resembled the polite prayer-meetings in the church upstairs. It has been discreet, impersonal, colourless, courteous in its differences, seemly in its modesty. But below the equator it has been led by three unforgettable wild men all as vital as leopards, as durable as elephants, and as unpredictable as Kenya earth movements. Below the equator the contemporary revolution has been unseemly, indiscreet, a scientific basement shenanigan where a one-time Chicagoan could feel entirely at ease. But the greatness of its discoveries have given us the outline of the origins of man.

Raymond A. Dart, the most famous of the three, was until his retirement in 1958 head of the anatomy department at the University of the Witwatersrand in Johannesburg. Australian-born, trained in Britain and the United States, he came to South Africa in 1922 to organize the Medical School's department of anatomy. Two years later he discovered *Australopithecus africanus*, the carnivorous ape of the high, ancient veld, and was plunged into scientific controversy from which he has never emerged. His was the other cry besides Eliot Howard's to break the pre-1930 stillness. And his was the strident, challenging voice from South Africa that orthodox science tried for so long to mute or discredit.

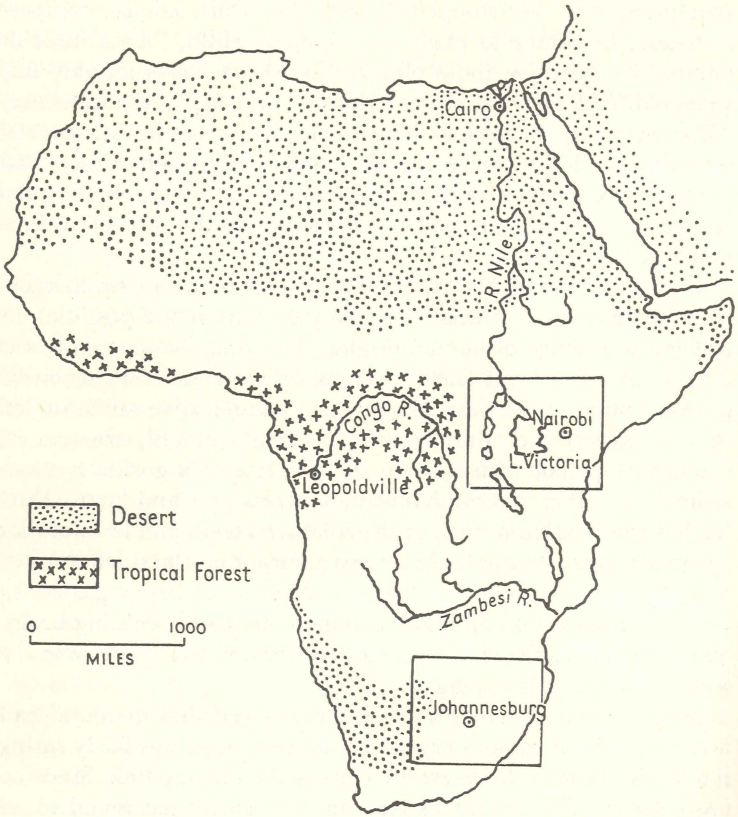
Dart is a small, compact man of far-reaching interests, far-gripping personal magnetism, and appalling durability. Until recent years he still gave lectures to his astounded class in comparative anatomy while brachiating cheerfully from the steam pipes over its heads. I recall an occasion a few years ago when the two of us were climbing a steep wall of the wild Makapan valley, in the northern Transvaal near the Limpopo River, to visit an unhappily situated cave. Halfway up my breath went out of me as from a

punctured tyre. We stopped. "Yes," said Dart, gently, compassionately, breathing as easily as a sleeping child, "it's a difficult climb." I reflected without pleasure that Dart was all of sixty-five years old. And he was smiling to himself in pleasant reminiscence. "Do you know," he said, looking about as if he had just discovered something, "this is exactly the place where old Broom always had to stop." I reflected with even less pleasure that Robert Broom, the second of the wild men, had not even entered the field of anthropology until he was seventy.

It was Raymond Dart's durability, tenacity, and unshakable belief in his own rightness that in my opinion made possible our present knowledge of human origins. The 1924 Taungs skull was that of an infant, and Dart's description violated every scientific preconception of the time. His grasp of comparative anatomy led him to project the adult creature as four feet tall, erect in its carriage, bipedal, with a brain still the size of a gorilla's: as an animal, in other words, halfway between ape and man. Dart further deduced from study of the creature's teeth and habitat that *Australopithecus africanus* had been carnivorous and had led a hunting life. The ape-man had been a transitional being possessing every significant human qualification other than man's big brain. The discovery in the view of the discoverer pointed to Africa as the scene of the human emergence.

But science in the 1920's was still convinced that mankind had arisen in Asia. A famous expedition of the period was fairly sifting the sands of the Gobi desert for signs of the missing link. Since no fossil background for Dart's creature had ever been found in all Africa, the Asian presumption prevailed. With equal justification science dismissed the claim that the man-ape had been a carnivore. As we have already noted, flesh-eating primates were unknown to science, and therefore could not exist. A third preconception, however, was even more important than these logical two. Anthropology, for the most mysterious of reasons, was convinced that the big brain had been the first, not the last, of man's evolutionary endowments. All human characteristics such as posture and diet and way of life had proceeded from the original gift of brain. Such a creature as Dart's, with a human body and ape brain, managed to get things all backwards.

The animal, like the griffin, was a scientific impossibility. Other factors may with reason have affected the verdict. Sweeping



Lake Victoria quadrangle: p. 250 Johannesburg quadrangle: p. 180

claims had been made on the basis of a single, infant skull by a young anatomist without previous experience in anthropology. Dart had compounded his sin by giving the creature a name which no one, I am sure, could pronounce. And the judgement of the northern prayer-meeting, I also suspect, was not entirely uninfluenced by the discovery's source in the church basement. Anything coming from below the equator has always, to the northern nose, borne the suspicious odour of someone hailing from the wrong side of the tracks. Whatever was the ambiance of the verdict, the unanimous body of northern science including such great ones as

Keith, Hrdlicka, Woodward and Elliot Smith dismissed Dart's southern ape as a young anatomist's fancy. And the young anatomist, in his citadel on Hospital Hill at the wrong end of the world, went right on writing about his discovery as if all the world agreed with him.

Such was the situation twelve years later when the second wild man found himself drawn by Raymond Dart's unyielding conviction. This was Robert Broom, with whom we shall become better acquainted at a later stage in this narrative. Broom was a fellow South African, seventy years old, who through a long and remarkable career had established himself as one of the world's greatest zoologists. Now in 1936 he emerged from retirement, and on a Sunday morning visited a cave not an hour's drive from Johannesburg. Like Dart, he was a small man, but unlike Dart his appearance was exceedingly formal. In his black hat and his black tie and his stiff white collar he investigated the cave with care. A week from the following Monday, just eight days later, he found the skull, teeth and brain case of an adult australopithecine. And they confirmed in every detail Dart's projection based on the infant skull.

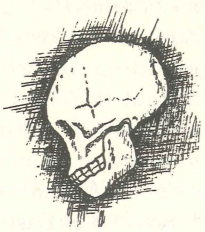
Subsequent discoveries have given us the fossil remains of more than one hundred individual australopithecines from five different South African sites. More is known today about nature's last animals than is known about nature's first men. But Broom's 1936 discovery was enough. The case against Dart began its slow collapse.

What Broom had proved was that the Taungs infant had been neither a freak nor an anatomist's fancy. In the meantime two thousand miles away to the north in the Lake Victoria area the third wild man of African science was busy demolishing the Asia fixation. L. S. B. Leakey is Kenya-born and is today curator of the Coryndon Museum in Nairobi. We shall return to Leakey, as we shall to Broom, much later in this narrative. But beginning in 1930 the Kenyan produced example after example of quadruped terrestrial fossil apes from Lake Victoria fossil beds, any one of which could have been ancestral to the erect-walking apes of the south. The australopithecines flourished on the Transvaal high veld three-quarters of a million years ago. The terrestrial apes of the *Proconsul* family had frequented Kenya lake shores in Miocene times, twenty million years earlier.

behaviour. For three decades anthropology had been pressing backward, in point of time, our knowledge of human history. And near the bottom of a dry East African canyon they met. The creator of our human culture had not been a man but an animal.

New riddles have been posed by the Leakeys' discovery, and we shall explore them. New controversies must be born where old ones have died, and we shall anticipate them as best we can. But the link between the world of man and the world of the animal has been definitely established. The African highland was humanity's cradle. And man was born of the southern ape.

5



In March, 1955, I sat for the first time in Raymond Dart's office on Hospital Hill in Johannesburg. We could not know that events within a few years would prove the southern ape to be the human ancestor. We could not then, with any sense of scientific responsibility, regard the relationship as more than probable, and to describe the creature simply as the last known animal before man. Even within such limitations, however, a claim of Dart's for which he was at that time preparing to present evidence loomed like a thundercloud over the panorama of our animal past. To inspect it we must go back another six years.

In 1949 Dart had dropped the other shoe. He had published a paper in the *American Journal of Physical Anthropology* claiming that *Australopithecus africanus* had gone armed. Study of some fifty-odd baboon skulls from various sites associated with the southern ape had revealed a curious, characteristic double depression. Dart concluded that the baboons had met sudden death at the hands of the southern ape; that the man-ape had used a weapon and that his favourite weapon had been the antelope humerus bone.

The use of weapons had preceded man.

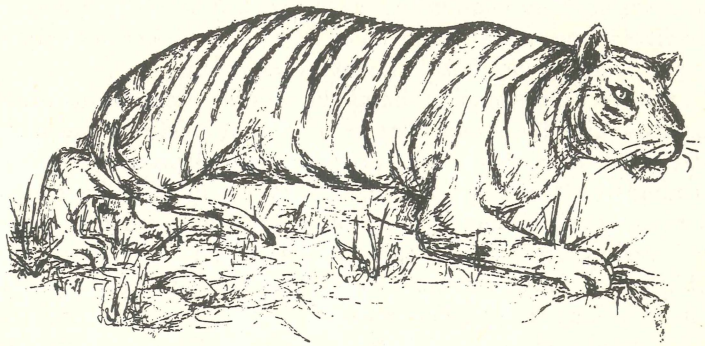
The blast set off by Dart's claim in the dignified corridors of northern science could not even be called a controversy, since there was no one on Dart's side at all. The reception allotted to his infant skull, exactly a quarter of a century earlier, seemed in comparison a hymn of praise. But Dart as usual persisted as if none disagreed. And in 1953 he published a paper that may some day rank with the *Communist Manifesto* among those documents which have contributed least to man's ease of mind.

The Predatory Transition from Ape to Man was a paper that no regular scientific journal would touch, and so it appeared in *The International Anthropological and Linguistic Review,* published in Miami. The stricken editor of this remarkable journal tacked a foreword to Dart's work disclaiming responsibility for the author's deductions, and even for the australopithecines themselves. The foreword ended with a pitiful sigh: "Of course, they were only the ancestors of the modern Bushman and Negro, and of *nobody else.*" (Editor's italics.)

What Dart put forward in his piece was the simple thesis that Man had emerged from the anthropoid background for one reason only: because he was a killer. Long ago, perhaps many millions of years ago, a line of killer apes branched off from the non-aggressive primate background. For reasons of environmental necessity, the line adopted the predatory way. For reasons of predatory necessity the line advanced. We learned to stand erect in the first place as a necessity of the hunting life. We learned to run in our pursuit of game across the yellowing African savannah. Our hands freed for the mauling and the hauling, we had no further use for a snout; and so it retreated. And lacking fighting teeth or claws, we took recourse by necessity to the weapon.

A rock, a stick, a heavy bone—to our ancestral killer ape it meant the margin of survival. But the use of the weapon meant new and multiplying demands on the nervous system for the co-ordination of muscle and touch and sight. And so at last came the enlarged brain; so at last came man.

Far from the truth lay the antique assumption that man had fathered the weapon. The weapon, instead, had fathered man. The mightiest of predators had come about as the logical conclusion to an evolutionary transition. With his big brain and his stone handaxes, man annihilated a predecessor who fought only



2. *One Tiger to a Hill*

The belated recognition by science of territorial behaviour serves in many ways to confirm the clear eyesight of poets and peasants. A century and a half before Eliot Howard, Oliver Goldsmith meditated that one rarely saw two male birds of a single species in a single hedge. And "one tiger to a hill" is a folk observation of equivalent discernment. But while peasant and poet may apprehend a truth, it is the obligation of science to define it, to prove it, to assimilate its substance into the body of scientific thought, and to make its conclusions both available and understandable to the society of which science is a part. It is an obligation which the sciences fulfil with the most conscientious discipline in any matter concerned with the blowing up of man; yet in matters related to understanding the fellow, there has been a tendency to accept responsibility more lightly.

Whether or not behind human behaviour there stands an all-powerful instinct for territorial possession is a question not to be kept in the ice-box. But no library in the world will offer either the general reader or the scientist himself a title devoted to the subject. No encyclopaedia so far as I know offers the briefest discussion under the heading, "territory." The word does not appear in the dictionary with a biological connotation. Only prime sources, such as we shall investigate in this chapter, will permit us to squeeze out for ourselves a definition, a comprehension, and an evaluation of

one of science's most significant discoveries. But before we quite lose ourselves in the animal world, let us take a brief glance at the price we pay when science fails to digest its own fruit.

Sir Solly Zuckerman is one of the world's most distinguished scientists. Like Raymond Dart he is an anatomist who has spent most of his career as the head of an anatomy department, that of Birmingham University. Like Dart also, his interests have been far-ranging and his fame was established in a field other than that of his main career. When Zuckerman was a fairly young man he published a study of primate behaviour establishing sex as the basis of animal society. Few scientific books of the century have commanded such wide or lasting authority. But its conclusions were based largely on zoo observations.

There is a delightful story—too good, undoubtedly, to be true—told by Zuckerman's Bloomsbury friends of the period. The young scientist was a South African who had not yet acquainted himself with all the nuances fluttering like pigeons around the staider British institutions. When his horrified friends learned that the new book was to be called *The Sexual Life of the Primates,* they whispered to him a fact of life: Primates, in England, could refer to nothing but the hierarchy of the Established Church. The book appeared under the title, *The Social Life of Monkeys and Apes.*

Whether or not the story is true, a hard truth emerges from it. The original title accurately described a book which is a masterpiece of observation of primate sexuality, even though conducted under the abnormal conditions of captivity. But if we read it as an analysis of primate society, then fallacy undermines all. In the London Zoo there are no animal societies other than artificial.

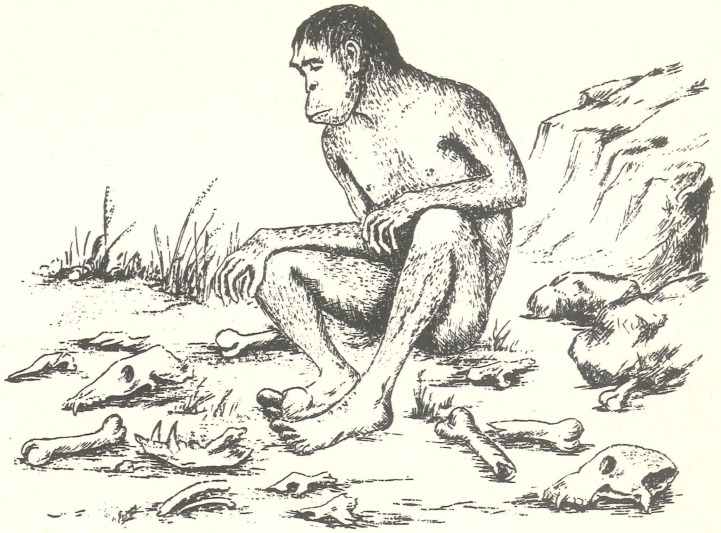
The book was written in 1932 before the difference between animal behaviour in captivity and that in a state of nature had become apparent. The famous anatomist cannot be blamed for presuming that the sex-obsessed activities of London baboons reflected true primate behaviour, or for drawing the logical conclusion that the powerful magnet of sexual attraction must be the force that holds primate societies together. But over and over we shall encounter in this narrative the disastrous consequences of applying utter logic to a false premise. And Zuckerman's premise was false. The creature whom we watch in the zoo is one denied by the conditions of his captivity the normal flow of his instinctual energies. Neither the drives of hunger nor the fear of the predator

stir the idleness of his hours. Neither the commands of normal society nor the demands of territorial defence pre-empt the energies with which nature has endowed him. If he seems a creature obsessed with sex, then it is simply because sex is the only instinct for which captivity permits him an outlet.

Disastrous for your life and mine were the philosophical consequences of Zuckerman's conclusion. Anthropology—the science of man—accepted zoology's word that primate society is based on sex, and reasoned most logically that since human society is not, then society as we know it must be of human invention owing no allegiance to biological evolution. Then sociology—the science of society—accepting anthropology's word that our society is of human invention, reasoned logically that the more unpleasant aspects of our social life, such as war and crime and a general reluctance to love our neighbours, must arise from special conditions of the human circumstance. And so you and I, accepting the word of a variety of authorities who should know what they are talking about, tend to reason that if the pressure of economic want, for example, could be erased from the world scene, then we should witness a marked diminution of crime, an inevitable relaxation of warlike moods, and a release of social energy for love's harmonious purposes. The hounds of our anxieties bay at old, cold traces, while nature's foxes watch amused.

The romantic fallacy, which we shall investigate in its proper place, is something as old as Rousseau; it can scarcely be attributed to a handful of London baboons. But science's unwillingness to reappraise the evolutionary basis of human society in the light of observations later and more realistic than Zuckerman's, has done much to keep the doctrine of human uniqueness a going concern to this very date. And for you and for me it has been a great pity, since Zuckerman's conclusion became obsolete exactly two years after it was presented.

In 1934 Johns Hopkins University published the classic monograph by the American zoologist, C. R. Carpenter, *The Behavior and Social Relations of Howling Monkeys*. For eight months, over a period of two years, Dr. Carpenter had kept under systematic observation the activities of some twenty-three troops of howling monkeys on an island in Gatun Lake, in Panama. During the course of his study he created and perfected techniques for the observation of animal behaviour in a state of nature which were to



7. *A Roomful of Bones*

For the 1955 report of the Smithsonian Institution, published in Washington the following year, Raymond Dart was requested to submit his case for the southern ape. The article was called *The Cultural Status of the South African Man-Apes*, and with its publication Dart's creature emerged from the shadowy underground of specialized scientific publications to become a recurrent figure in the world press. In the course of that article he recalled:

"The South African 'missing link' story goes back to 1924 when the late Miss Josephine Salmons, then a young science student in anatomy, brought me a fossil baboon skull that she had found on the mantelpiece of a friend she had visited the previous Sunday evening. It had come from the Northern Lime Company's works at Buxton, and was the first intimation that any fossil primate had been found in Africa south of Egypt. So we became very excited, and after interviewing the professor of geology, Dr. R. B. Young, learned to our satisfaction that he was going to Buxton the following week.

"Arriving at Buxton, Professor Young learned that in the pre-

vious week a miner, M. de Bruyn, had brought in a number of fossil-laden rocks blasted out the week before. When they came to Johannesburg I found the virtually complete cast of the interior of a skull among them. This brain cast was as big as that of a large gorilla; and fortunately it fitted at the front end on to another rock, from which in due course there emerged the complete facial skeleton of an infant only about five or six years old, which looked amazingly human. It was the first time that anyone had been privileged to see the complete face and to reconstruct accurately the entire head of one of man's extinct ape-like relatives. The brain was so large and the face was so human that I was confident that here indeed was one of our early progenitors that had lived on the African continent; and as it had chosen the southern part of Africa for its homeland I called it *Australopithecus africanus*, i.e., the South African ape."

In such an off-hand, homey, accidental fashion was one of the most significant of human adventures initiated. Buxton is a village on the fringe of the Kalahari desert near a railway station the name of which was then spelled Taungs. Dart's discovery became known as the Taungs skull. The fossil-laden rocks had come not from the deposit itself but from a cave formed within the oldest of four mantles of lime. Geologic evidence combined with the nature of the associated fossils to indicate that the infant man-ape had lived in the early part of the Pleistocene, towards a million years ago. The arid nature of the site discouraged any interpretation of the creature as a type of advanced arboreal ape. The ape is a forest creature, but forests could not have existed there in his day any more than they do in our own.

Dart had nothing but this single immature skull as companion for his meditations. But on the basis of tooth development he could assay the creature's age at five or six years. From the position of the *foramen magnum*—a little opening in the skull through which the spine connects with the brain—the young anatomist could tell that the creature walked upright. Quadruped monkeys and brachiating apes hold their heads forward on their bodies. Only a true biped can hold his head squarely on top. The southern ape walked erect or very nearly so.

On the basis of many an anatomical diagnosis Dart projected the adult creature as being four feet tall and weighing ninety pounds, with a brain about as large as that of a gorilla. He con-

the veld. And for *Paranthropus* to have evolved into man—if such evolution could have been possible at all—would have required mutations by the dozen.

We shall close the drawer on the mystery for the moment as a dramatist closes the drawer on the gun. *Paranthropus* will provide the clue to a larger mystery, when the time comes, more closely allied to the human fate. But for the purposes of this narrative we shall cut through the wilderness of scientific names that has confused science and can only confuse the reader. One genus and two species are all that the South African discoveries should allow. And so from this point on we shall revert to a classification once suggested by Oakley and speak of *Australopithecus africanus*, the small man-ape who was a carnivore, and *Australopithecus robustus*, the large man-ape who was not. That is all we need remember. And since for a long period we shall neglect Broom's specialized *robustus*, any reference to the southern ape, or to australopithecus, may be understood to refer only to Dart's little *africanus*.

One more discovery must be mentioned, however, before we leave this description of our lost southern friends. Just before Broom died, John Robinson made the most enigmatic of all the South African discoveries. In the midst of the Swartkrans breccia, which has yielded some eighty fossilized fragments of long-dead gorilla-crested creatures, Robinson found five fragments of two individuals quite unlike their heavy fellows. Their bones had the delicacy and their teeth the form of an advanced *africanus*. They seemed almost surely to be carnivores. A fragment of an upper jaw showed evidence of a flattening face and a true nasal spine. Robinson called his discovery *Telanthropus*. But were they australopithecines? Or were they true men? And what were they doing in the Swartkrans cave, five hundred thousand years ago?

If the mysterious strangers in the Swartkrans cave were indeed true men, then no earlier are today known anywhere on earth. But we have too few fragments to effect positive identification, and no more are likely to be found for a while. Shortly after the discovery, Robinson went off on his annual leave and a tooth-paste manufacturer invaded the cave. The tooth-paste manufacturer was in search of lime, and when Robinson returned the cave was a ruin. No one has ever had the money to put it together again.

begun with an object like the most sophisticated of the Sterkfontein weapons with fourteen surfaces from which flakes had been removed to achieve its design. No background for such a creation existed at any australopithecine site. We were further from answers than ever. But a new means for analysis had come my way.

It was June, 1957. In Nairobi I had obtained from Dr. Leakey a preliminary copy of the Simpson theory, not yet officially published. On the basis of Simpson's description of weather cycles, I had begun the assembly of the Pleistocene calendar to which the reader has already been referred. Inspection of the new correlation revealed what had not been obvious before, that handaxes previously discovered in East Africa were not only the counterparts of the new discoveries at Sterkfontein; they were their contemporaries. And in the Olduvai Gorge lay the record of their cultural evolution.

An observer in Johannesburg in June, 1957, could come to just one conclusion: that the metropolis of the human creation lay farther north. Down here in cavernous limestone museums beneath the sky-swept southern plains had been preserved by provincial tranquillity certain conservative vestiges of our Pliocene experience. Flashes of the Pleistocene resolution might burst through: an unidentified stranger lying among beings of an earlier time; a single piece of Sterkfontein breccia in which, frozen in stone, lay the weapons of the future and the corpses of the past. But the third act of the human drama had transpired two thousand miles away in the equatorial, metropolitan north on the very same East African high plateau where twenty million years earlier the human stock had found its Eden.

Two years and a month later the lightning began flashing over Tanganyika's Serengeti plain. Mary Leakey found the skull of an australopithecine in one of the older lake beds of the Olduvai Gorge. Around him were scattered pebble-tools. The author of our human culture had been an animal—and, as we shall see, the wrong animal, at that.

With the Leakeys' discovery of what they termed incorrectly *Zinjanthropus* and announced incorrectly as true man a crisis not just for science but for all modern thought was launched with proper drama in a sea of appropriate confusion. It is a crisis fed today by announcements in the world press of still further discoveries none of which we are prepared emotionally, philosophi-

cally, or scientifically to meet. It is the crisis of man's estimate of man, and it will spread with deepening and broadening ramifications into the indefinite future as we come to comprehend its significance.

But it is a crisis which by the fortune of natural accident rests well within human definition.

The Serengeti plain, known to few but hunters, lies just to the southeast of Lake Victoria. It shelters the last vast reserves of wild creatures remaining on earth, and in fossil beds beneath its surface the limestone menagerie of the human beginning. As three times in the last million years Lake Victoria has brimmed and twice been reduced to a swamp, so three times the interminable plain has collected its lakes, witnessed rivers flow, seen its face turn green with brush and woodland, and twice been reduced to dust and sparse grasslands.

All today would be buried under time's accumulations but for a gift from the anthropological gods. An uplift came to the uneasy African land, and the Olduvai River when rains permitted cut a long, narrow gorge through the risen land. And so today's rare traveller standing at the bottom of the gorge is privileged to look up at bed after bed of ancient deposits exposed by the river's action. They tower above him three hundred feet high; and every bed, in every stage of its formation, contains the evolving stone implements of our human culture.

The Olduvai Gorge offers an almost continuous record of the human experience, a million years long, from the opening of the Pleistocene to the most recent past. We may debate the dates at which certain events in that record took place; and we may disagree in our interpretations of those events and in our identification of the beings who participated in them. But we cannot deny that what we are studying is the history of man, and that it can be found nowhere else on earth.

At the bottom of the Olduvai Gorge is the oldest deposit, known as Bed One. It is approximately one hundred feet thick, and consists largely of silty lake deposits in which one finds the pebble-tools that initiated our human culture. Its age is in dispute. Orthodox geology, tied to its inadequate glacial clock, calls Bed One Middle Pleistocene, half a million years old. The calendar presented in this account approximately doubles geology's estimate. Whatever be the truth, it was in Bed One,

twenty-two feet from its top, that the Leakeys found the being with the pebble-tools.

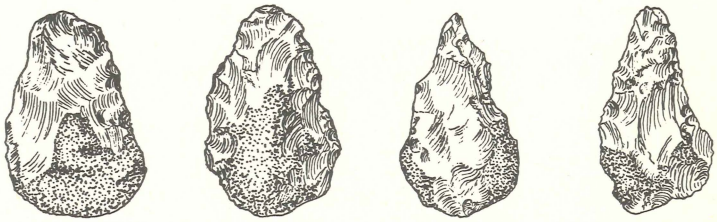
Between Bed One and Bed Two there exists what geologists call an unconformity. A length of time passes which we cannot define since erosion carries away a portion of the earlier deposit. Dr. Leakey has found there little silicate formations called desert roses which can only come about under the driest conditions. Reference to the chart will show that this dry period of erosion corresponds most probably to the long, dry interval in South Africa when *Australopithecus africanus* left his fossil souvenirs in lime-packed caves. But whether under equatorial conditions the erosion at Olduvai carried away the deposits of a hundred thousand or a million years, we cannot know. In any event, it is this unconformity that makes most difficult any exact dating of events in Bed One.

With Bed Two, fortunately, things get more definite. The weather turns wet and lake beds again accomplish their deposits. This is the long, wet mid-Pleistocene period that brought brush and *A. robustus* to the South African veld and the first pair of glaciers to Europe and America. The rains opened approximately six hundred thousand years ago, and so far no sign of man, of pre-man, or of human culture appears anywhere on earth but in Africa. But from the very bottom of Bed Two we find handaxes being made around the Olduvai lake margins; and they have evolved directly from the pebble-tools of Bed One.

Who were the handaxe-makers who gathered around the earliest lakes of Bed Two? Were they small-brained australopithecines? Medium-brained transitional beings? Big-brained men? We do not know, though we should know quite shortly. But whoever they were, their cultural efforts had proceeded by direct evolution from the work of Bed One. Whereas the earlier being had simply chipped an edge on the end of a pebble, the handaxe maker continued the chipping around the edges to create a true shape. And whereas the earlier implement had been useful only for scraping and scratching and perhaps for whittling rough wooden spears, there was now being created however crudely the all-purpose weapon and tool the perfection of which would pre-occupy stone-age mankind for hundreds of thousands of years to come.

Bed Two is almost as thick as Bed One, and its lake deposits encompass a period roughly two hundred thousand years long. In this span may be recognized four major stages of handaxe

evolution which correlate with events throughout all the Old World. The oldest deposits at the bottom yield handaxes known to anthropologists as Chellean 1. In this first stage they are crudely chipped, thick, and somewhat oblong in shape. These are the weapons that were brought to Sterkfontein, we may assume by migrant bands of the period. In the second stage the handaxe gets slimmer and takes on a beak. Then in the third stage the weapon at last takes on a true point.



The consequence of the improved weapon is immediate and may be read on our calendar, for with it man moves. The first known stone implements found anywhere on earth outside the African continent appear in France. And they are Chellean. From approximately the same period we have the first definitely human fossil found elsewhere than in Africa, Germany's Heidelberg jaw. Could the European memories be of anything but African bands following the movement of game northward in the mild interglacial climate?

Human migration now, however, becomes still more far-reaching. With the immensity of the second ice-sheet Europe is depopulated. Game and hunters retreat, some undoubtedly to Africa. But many thousands of miles away to the east true man makes his appearance in the caves of China and the valleys of Java. These heavy-browed beings known to anthropologists as pithecanthropines are regarded by anatomists as related to Heidelberg Man, and the presumption has been that their western representative appeared in Europe as a migrant from Asia. On the basis of the new Pleistocene calendar, however, I have advanced the hypothesis that all reached their destinations by migration from the African heartland. The hypothesis seems at least partially confirmed by a Leakey discovery announced in early

1961. In Olduvai's Bed Two the maker of Chellean 3 handaxes has at last been found and even the most superficial photographs of his skull reveal him as a probable pithecanthropine.

The cultural force released by the beings of Bed One may now be traced to the caverns of Choukoutien. There the Asian wing of early mankind will pursue its own evolutionary course and evolve its own characteristic flake implements. These characteristics will be brought back to Europe someday by the Asian descendant, Neanderthal, before he and the entire pithecanthropine line vanish beneath the full *Homo sapiens* flood. But meanwhile, at about the same time as the establishment of man in Asia, the Olduvai handaxe-makers pass a fundamental moment in the history of human technology.

The final stage in Bed Two's record of cultural evolution is the discovery of the principle of the chisel, the tool-to-make-a-tool. Chellean handaxes have been made by striking one stone with another, as were the earlier pebble-tools. But now a piece of bone or hard wood is held where the flake is to be struck off, and the chisel is struck, not the stone. The flake flies off with a precision never before attained. Handaxes so produced are known to anthropologists as Acheulian.

Now—about four hundred thousand years ago—the pattern of radiation is repeated. The great rains end, the Serengeti dries up, the lakes vanish. Dry Bed Three shows a slim cultural record, for the handaxe-makers scatter. But the ice-sheet has withdrawn from Europe and men again move north. *Atlanthropus* appears in North Africa, and he is pithecanthropine, and his Acheulian weapons mark his origin as East African. Swanscombe Man is found in Thames River gravels, and his weapons too are Acheulian, made with a chisel. Throughout the two hundred thousand years of the Great Interglacial the Afro-European wing of early mankind is established from Britain to South Africa. But not till Olduvai's wet, populous Bed Four and the return of the glaciers to Europe will East Africa again become the metropolis of western man.

Our concern in this narrative is not with true man's growingly complex history, but with man's emergence from his animal past. And so now we must return to the vast filing case on the Tanganyika plain. Who made the first Chellean handaxes? The answer is there. Who was the being who invented the tool-to-make-a

tool? His bones are in the file. Under what mysterious circumstances did we acquire our big brain and the final determinant of our nature? And when did *Homo sapiens* insert his chinfulness into the human story? All must be in the file, but we know next to nothing. The story of man lies hidden and awaiting revelation in the towering, orderly beds of Tanganyika's Grand Canyon of Human Evolution. And the wonder is that we know anything at all.

A graceless observation must be made at this point. Romantic fortunes have been lavished on the restoration of temples and palaces in the Middle East. In Asia, the Rockefeller Foundation spent more money on the single site of Choukoutien, the home of Pekin Man, than has been spent by all sources in all time on the investigation of man's origin in all Africa below the Sahara. Even the direct cost to the author and his publishers for the research, the writing, and the publication of this account exceeds science's total investment in the four main anthropological sites in the world—Olduvai, Makapan, Sterkfontein, and Swartkrans. It is a preposterous fact that the wild men of African anthropology have assembled our main body of knowledge concerning the human origin with less funds available for direct research than have been needed to record it. Without the luck and the dedication, the experience and the genius, the courage and the perseverance of a handful of incorrigible scientific dreamers below the equator, we should know nothing. They have been on their own.

Luck, dedication, experience, genius, courage and perseverance guided Mary Leakey on July 17, 1959, to a fossil skull exposed by erosion in the oldest bed of the Olduvai Gorge. It was a skull crushed into four hundred fragments by the weight of the years that lay above it. The being who had once animated this skull had died on the shore of a vanished lake. All about him lay pebble-tools made of lava and quartz, and the bones of small animals which he and his band had eaten. And it was Abel.

A riddle to satisfy a Sphinx grinned out from the coffin of a forgotten beach. Square-toothed, heavy-jawed, small-brained Abel, with a crest on his skull like a mountain gorilla's, had been the fellow who had started it all.

Dr. Leakey, strictly in accordance with that anthropological fashion which extends the title of man to any hominid capable

from these attributes—and the chin merely distinguishes *Homo sapiens* from earlier members of the human family—it is difficult to say where man began and the animal left off. We have a quality of self-awareness uncommon among animals, but whether this is a consequence of the enlarged brain or was shared with our extinct fathers, we do not know.

In any event, we do have the power to be aware of self, and to visualize ourselves in a present or future situation. And the power dictates as entirely natural our curiosity concerning the human outcome. Whether self-awareness will actually influence that outcome must strike any observer of human behaviour, on the basis of past performance, as dubious. When human consciousness of potential disaster has in the past come into conflict with instincts of animal origin, our record has been one of impeccable poverty. No past situation, however, can compare with the contemporary predicament of potential nuclear catastrophe. And self-awareness, generating mortal fear, may at least partially forestall an evolutionary disaster.

How great will be the role of reason in such inhibition or diversion of the weapons instinct must be entirely of a collateral order. The human brain came too suddenly on to the evolutionary scene, and lacking animal foundation lacks the command of instinct to enforce its directives. The mind's decrees rank merely as learned responses, and we cannot expect too much of a learned power placed in opposition to an instinct. We cannot expect too much from the human capacity to reason, anyway, since its most elaborate energy is channelled as a rule into self-delusion and its most imposing construction erected so far has been that fairy-tale tower, the romantic fallacy.

The human mind, nevertheless, however sorry it may seem on a basis of past performance, cannot be ignored as a potential participant in some future human resolution. Granted a fresh comprehension of human nature and casting off pretence that reason carries power, the human mind can make alliance with animal instincts profound enough in our nature to engage forces for survival larger than the mind itself. We shall return to the thesis later in this chapter, but let us now look into the contemporary crisis of war and weapons, and see if our enhanced understanding of human behaviour benefits us at all in the illumination of the possible outcome.

lopithecus africanus authored a fashioned bone culture to which man added little for almost half a million years. On the dusty, inaccessible Serengeti plain the Leakeys face cobras, rhinos, leopards, black-maned lions, and a twenty-five-mile-long gash in the Tanganyika earth that will reveal, some day, the authentic story of the human beginning.

For this investigator, however, a case is closed. The evidence has been assembled. Some bits may be dubious, some misinterpreted. Some may be modified, even nullified, by future discovery. But for the purposes of this investigation the whole of the evidence should still support a rough yet glorious conclusion.

Not in innocence, and not in Asia, was mankind born. We are a fraction of the animal world, and to its subtle ways our hearts are yet pledged. We are children of Cain. And were it not so, then for humanity there would be small hope.

A case is closed. The scientific role of detachment may be cast aside. Guided by the arrows of the new enlightenment, we may indulge in that happiest of human entertainments, sheer speculation. Now tables may be pounded, tempers may rise, faces may grow red, and in the grand manner of the howling monkey we may all return to the most blissful of human transactions, outshouting each other. But we shall conduct our negotiations in a brand new room where old values like old statues stand now on their heads. And the bright new wines that inflame our thoughts are wines never tasted before.

It passes beyond the jurisdiction of this investigator to close a scientific narrative with an orgy of speculation. I feel that the reader, however, keeping in mind my boyhood days in the cozy basement of a Chicago church and recalling my undying enthusiasm for swinging chairs in the dark, should out of compassion if nothing else grant me a very small orgy. While I indulge myself, he may feel free to hide behind a door in panic, to grope for another chair and come after me, or if such is his nature, to get himself as rapidly as possible out of the church basement.

I assert first the paradox that our predatory animal origin represents for mankind its last best hope. Had we been born of a fallen angel, then the contemporary predicament would lie as far beyond solution as it would lie beyond explanation. Our wars and our atrocities, our crimes and our quarrels, our tyrannies and our injustices could be ascribed to nothing other than singular

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Robert Ardrey was born in Chicago, majored in natural sciences at the University of Chicago and thereafter became a successful playwright and screen writer. In 1955 he began his African travels and studies. *African Genesis* is the impressive result of these pursuits.

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