Oreopithecus: Homunculus or Monkey?

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Oreopithecus: Homunculus or Monkey?

This fossil primate has recently been described as manlike, which calls attention to a classical argument as to whether the primitive ancestors of man resembled little men or apes

by Loren C. Eiseley

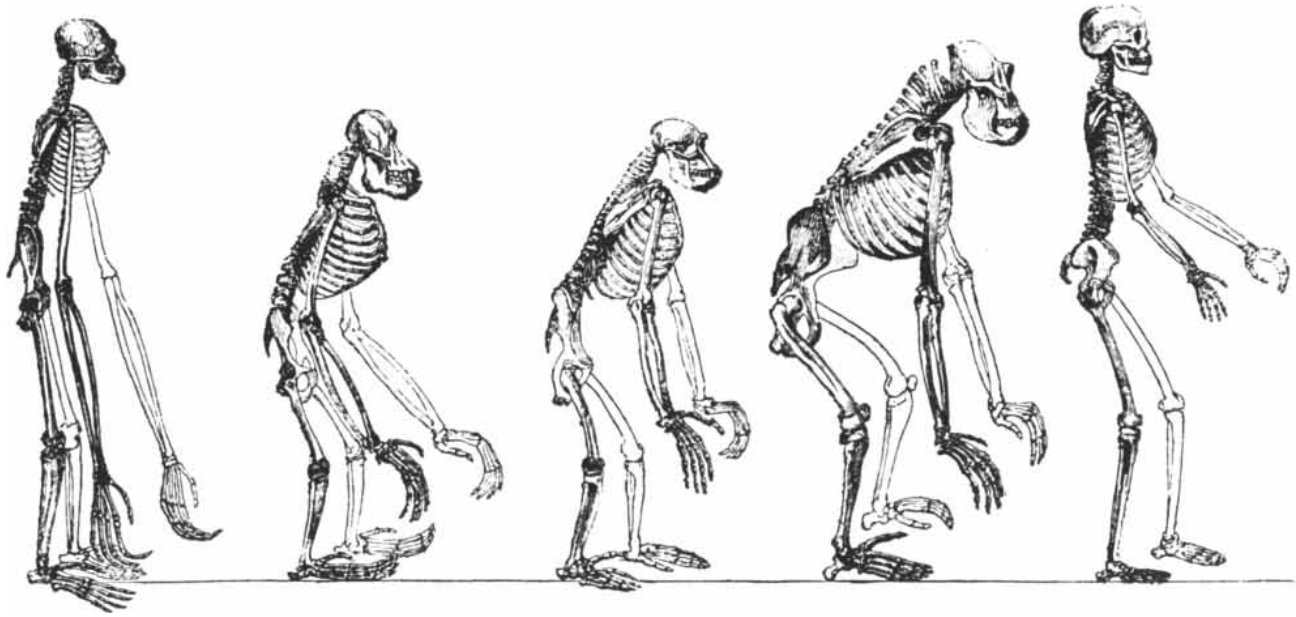
Three months ago a curious anthropological argument flamed suddenly for a few days in the newspapers. It was touched off by the arrival in New York City of a paleontologist from Switzerland bearing the bones of a small primate long known to science as Oreopithecus. Johannes Hurzeler of Basel presented to a group of scholars gathered at the Wenner-Gren Foundation for Anthropological Research his view that the bones of Oreopithecus showed human rather than anthropoid affinities. Since these bones are estimated to be 10 million years older than the earliest known fossil men, his announcement made headlines.

"Fossil Research Questions Darwin Evolution Theory," the New York *Times* announced. The *Herald Tribune* editorialized: "No Missing Link?" Specialists on fossil man were besieged by telephone calls from reporters and by faintly derisive queries from anti-evolutionists whose interest had already been whetted by the Piltdown hoax. Perhaps this new contradiction would mark the final exit of the man-monkey and of the anthropologists along with it.

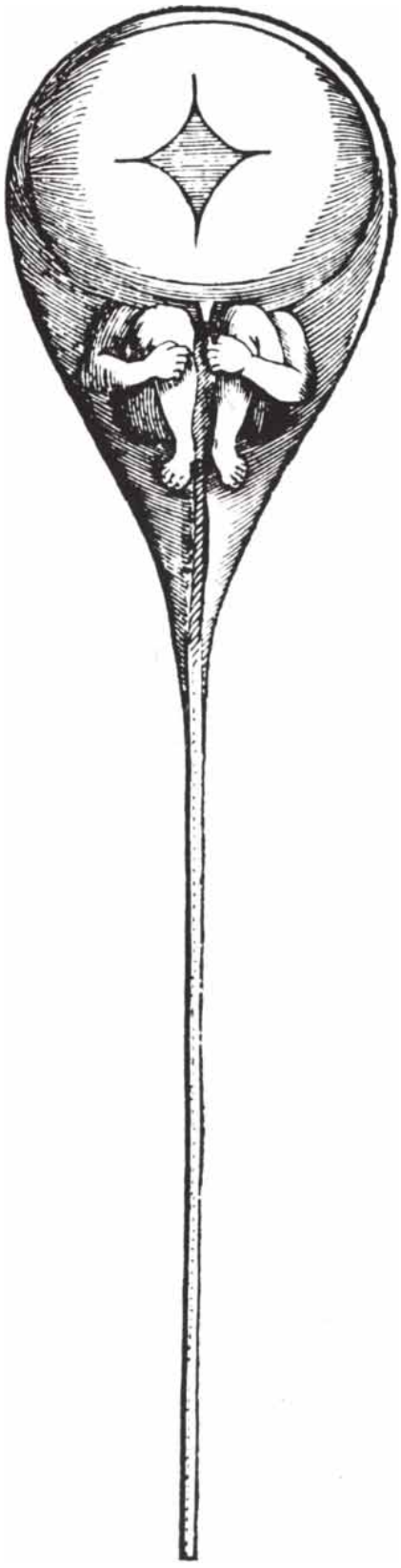
By the time scientists had begun to respond, the press had passed on to other things, leaving in the mind of the public a confused vision of a sort of "little man" who, so the newspapers said, had been found in a coal mine in Tuscany. Like most such episodes, that of Oreopithecus has a history, and the argument over it is of the same general nature as two similar controversies fought within the memory of men now living.

This episode has served to draw attention to a long-existing debate among anthropologists which has occasionally waxed acrimonious. The partisans divide basically into two schools: the school of the "little men" and that of the "apemen." The former pursue the figure of man backward until, upon some far wall in time, it appears as a dwarfed, bigheaded little shadow; the latter see our earliest ancestor shambling into the light like some great shaggy anthropoid. The argument recalls the ancient dispute between the preformationists, who saw in the human sperm cell a preformed homunculus, or little man, which had only to grow to adult size, and the epigenesists, who judged correctly that each embryo acquires the characteristics of a human being only through development.

Some anthropologists search for human characters—vertical front teeth, a



ONE 19TH-CENTURY VIEW of human evolution, by stressing the similarities between living apes and man, suggested that the remote ancestors of man resembled living apes. This picture from T. H. Huxley's *Evidence as to Man's Place in Nature* compares the skeleton of man (*right*) with those of the gibbon, orang, chimpanzee and gorilla (*left to right*). All except the gibbon are drawn to scale.



A 17TH-CENTURY VIEW of human embryonic origins is reflected by this woodcut in Nicholas Hartsoeker's *Essai de Dioptrique*. Hartsoeker believed that the human spermatozoon contained a little man, or homunculus. The hole in its head represented the open sutures in the infant skull.

shortened face, an expanded brain case —early in the human line of descent. They seek, in other words, for something dangerously close to the homunculus of the preformationists. They "prove" evolution by finding, as St. George Jackson Mivart said in 1874, "an ancestral form so like man [that] we have the virtual pre-existence of man's body supposed, in order to account for the actual first appearance of that body as we know it."

The more thoroughgoing evolutionists, in contrast, have looked for forms which contained only the *possibility* of development into man. Such students have generally regarded man as a relatively recent emergent from a group of primates which also gave rise to the modern great apes; in other words, the comparison of man with the anthropoids of today has been based on the assumption that they and we had ancestors in common.

Charles Darwin was not the first to notice our likeness to the monkeys and apes. Such observations extend into antiquity, and by the 18th and early 19th centuries philosophers were arranging the primates in an order of complexity. As voyagers began to come into contact with primitive peoples, these were often placed on the scale as grades between the anthropoids and civilized European man. The Hottentots of the Cape of Good Hope particularly appealed to the Western mind as candidates for such a place; it was said that their language was only a step above the chatter of apes.

Thus notions of the "missing link" were in existence long before Darwin and long before the appearance of a truly evolutionary philosophy. Darwin himself cautiously refrained from attempting to trace man's precise relationship to the apes. But some of his followers, notably T. H. Huxley, tackled the problem head on. Huxley was provoked to his excursion into man's past by events at the famous meeting of the British Association for the Advancement of Science at Oxford in 1860. He had borne the brunt of the conservatives' attacks on evolution. At this meeting Richard Owen, England's foremost comparative anatomist and a mortal enemy of Darwin and his followers, attempted to maintain man's unique position in the animal world by placing him in a distinct subclass of the mammals for which he proposed the name "Archencephala." This classification was based upon brain characters which Owen maintained did not occur in the lower primates. Huxley, his ire aroused, set out to demonstrate

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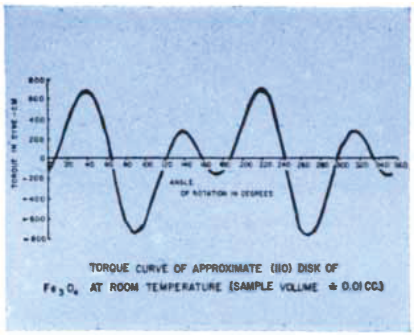

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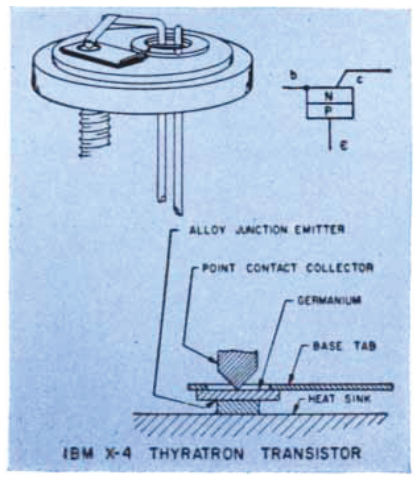

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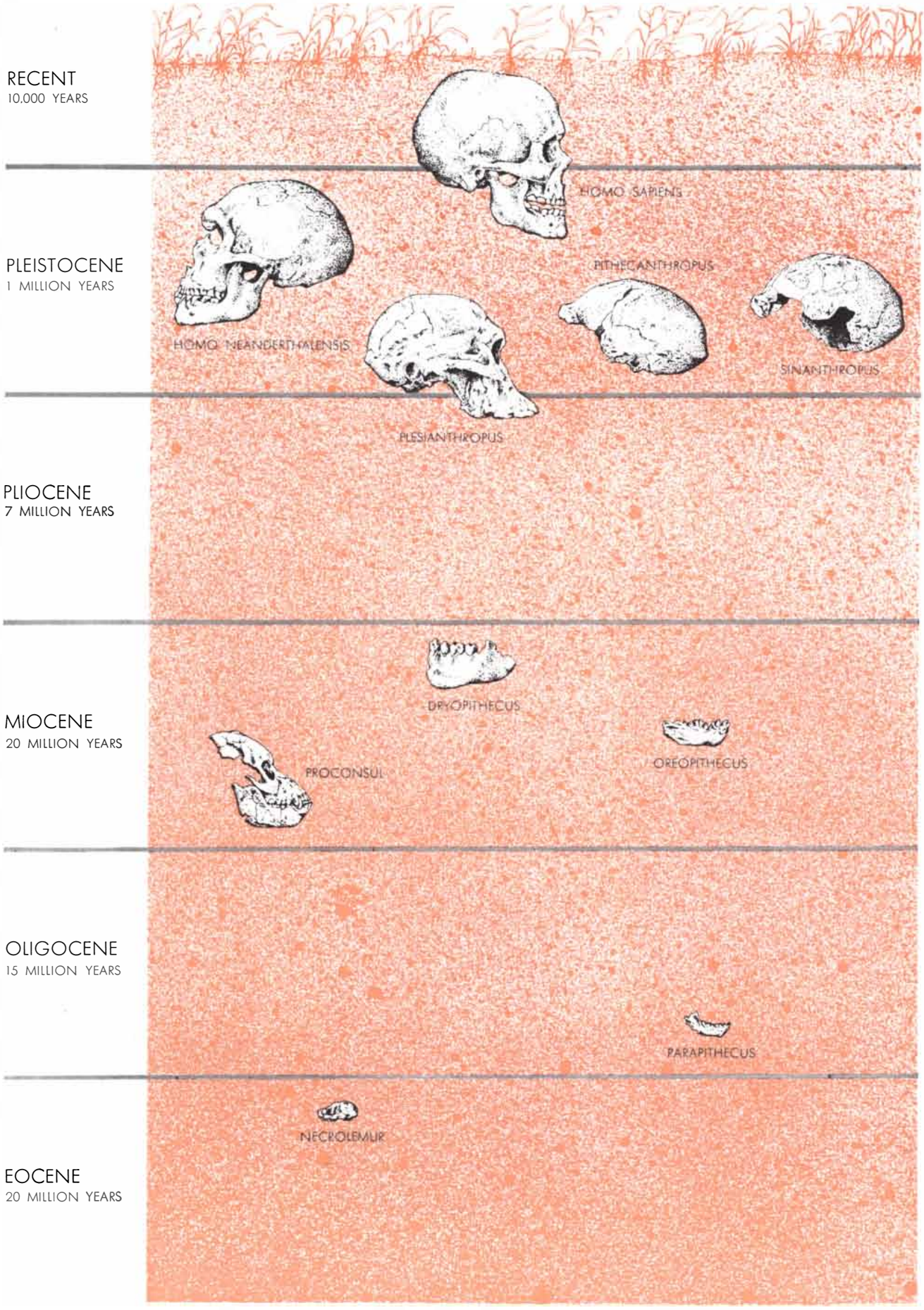


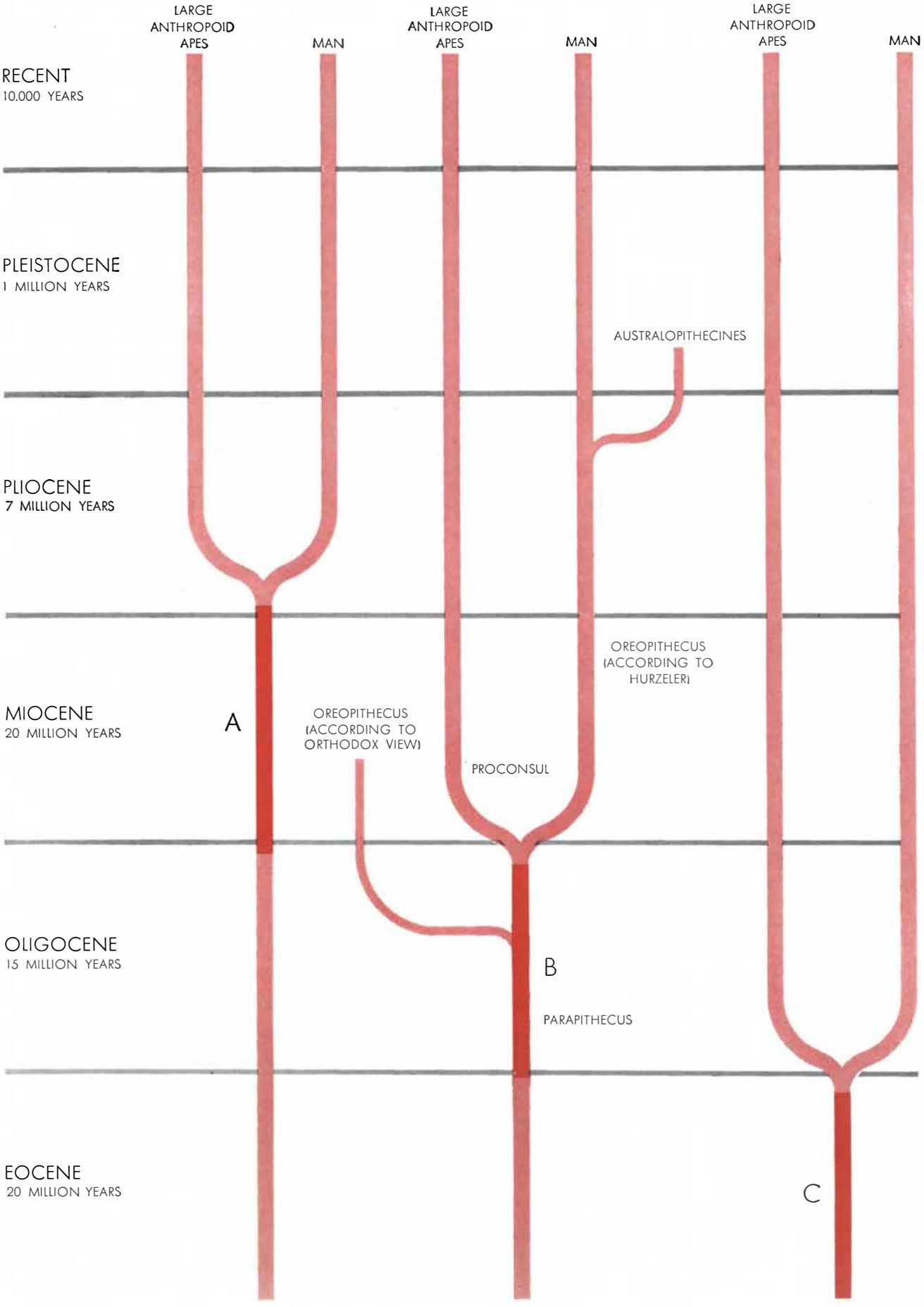
that Owen was wrong, that man was closely related to the other primates. He composed a series of lectures which were published in 1863 under the title *Evidence as to Man's Place in Nature.*

In this work, which more or less set the pattern for much that followed, Huxley thoroughly demolished Owen's position. He took the view that "the surface of the brain of a monkey exhibits a sort of skeleton map of man's, and in the manlike apes the details become more and more filled in, until it is only in minor characters . . . that the chimpanzee's or the orang's brain can be structurally distinguished from man's." Huxley was quite willing to admit that man's own origin was obscure and might go back millions of years to a common ancestor, but he insisted that the modern apes were our closest surviving relatives. If Huxley dwelt too heavily and too emotionally upon anatomical correspondence between ourselves and the great apes, it must be remembered that at the time he wrote the evolutionists were fighting primarily for a principle, against the orthodox "special creationists." Furthermore, it must also be remembered that very few human fossils had been discovered, and these were fragmentary. Our living relatives in the trees could be seen at the zoo, and it was inevitable that they should dominate man's imagination. Serious scholars even came to believe that microcephalic idiots were throwbacks to some remote period of the human past.

By the beginning of the 20th century the ape origins of modern man seemed pretty well established. The Pithecanthropus skull cap had bolstered this view. Many felt that from a form something like that of a chimpanzee it was an easy step to the Java man and thence on to Neanderthal and modern man. But at the turn of the century there came a new revolt against the ape.

The attention of anatomists was attracted to a small, tree-living creature in southeast Asia possessing definite characters of a primate. The tarsier (*Tarsius spectrum*), an animal with enormous eyes and about the size of a small kitten, has a brain and other characteristics

TEN PRIMATE FOSSILS are located in time by the chart on the opposite page. The time scale is at left. The depth of each epoch is not proportional to its length. Plesianthropus is one of the Australopithecines, or South African man-apes. Despite its name, Necrolemur is not a lemur but a tarsioid.



which ally it to the lower monkeys. In 1918 F. Wood Jones, a distinguished English anatomist, first expressed the heretical view, which he has maintained and developed since, that man arose from a tarsioid rather than from an anthropoid ancestry.

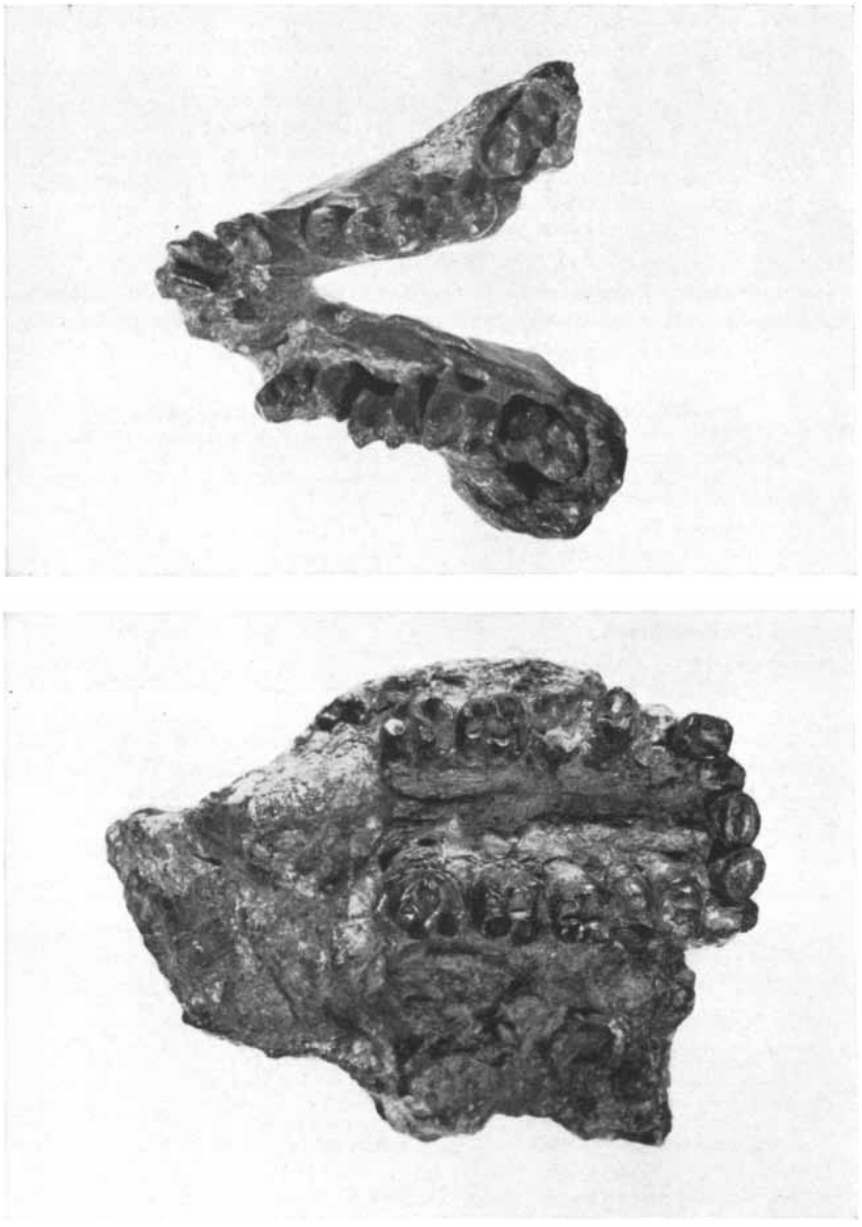
Wood Jones insists that the human line is very ancient, going back to a past tens of millions of years old in the Tertiary Period. He predicts that man's immediate ancestors, if ever discovered, "will be utterly unlike the slouching, hairy 'ape-men' of which some have dreamed . . . and will be found in geological strata antedating the heyday of the great apes." The ancestors of man, he says, were "small, active animals" already endowed with legs longer than their arms, small jaws without protruding teeth, and enlarged craniums. They were not swingers in trees: the human hand and foot, he contends, are too specialized to have been made over rapidly from an arboreal ancestor's. The present-day tarsiers in the trees, according to his view, evolved their tree-living specializations later, but our early tarsioid ancestor walked on the ground.

Wood Jones's proto-man thus sounds like a homunculus. When he first advocated his views, he found very few followers. Henry Fairfield Osborn, the late paleontologist, though not a Wood Jones follower, inclined toward a homuncular dawn man going back to early Tertiary times many millions of years ago. "I predict," he said, "that even in Upper Oligocene time we shall find pro-men, and that they will have pro-human limbs."

Wood Jones and Osborn were vigorously refuted by primatologists who championed the orthodox view that man

THREE THEORIES on the common ancestry of man and the large anthropoid apes are depicted on the opposite page. The theory illustrated at left supposes that in the Miocene Period man and the anthropoid apes had a common ancestry of dryopithecoid apes (A). The theory illustrated in the center suggests that in the Oligocene Period they had a common ancestry of unspecialized Old World primates in which both monkey and anthropoid ape traits were intermingled (B). On this theory the Swiss scholar Johannes Hurzeler believes that Oreopithecus is a direct ancestor of man. The orthodox view is that this primate was a separate offshoot of the common stock. The theory illustrated at right proposes that in the Eocene Period man and the anthropoid apes had a common ancestry of Old World tarsioids (C). All three lines are simplified and do not purport to represent all branches of the primate family tree.

was a "made-over ape." They insisted that man's immediate forerunners could not be so ancient as Wood Jones and Osborn said. "It seems anachronistic," wrote William King Gregory, "to attribute to the very remote Tertiary ancestors of man the long legs, long thumbs, big brain, short face, small canines, etc., which are now diagnostic characters." But by the 1940s the "made-over ape" point of view had moderated. The most important factor in this change was the discovery in South Africa of the fossil *Proconsul africanus*—a creature of the early Miocene (the period immediately after the Oligocene) which combined characters of early Old World monkeys and great apes. William L. Straus, Jr., of the Johns Hopkins University, voiced a suspicion that man's immediate ancestors might have been "more monkey-like than anthropoid-like." Straus, who takes a very sane and cautious position on this lengthy controversy over the human ancestry, feels that the anthropoid ape theory is weakest in its failure to account for anatomical traits which man shares with the monkeys and lemurs. More recently W. C. Osman Hill, the well-known English primatologist, has come to believe that man branched off the primate stock below the great ape line. He even suggests that Straus's view might be reconciled with Wood Jones's tarsioid hypothesis if some early Oligocene monkey of tarsioid affinities were admitted on the line leading to man—a form, say, like Parapithecus.



FRAGMENTARY FOSSILS of *Oreopithecus bambolii* Gervais were found in Italian coal deposits. These fragments are mandibles photographed from above the crowns of the teeth.

Thus before Hurzeler's recent announcement a slow shift of thought or widening of possible horizons had been under way in the study of human evolution. The theory that man came down late out of the trees has been dropped in some quarters and is less explosively defended in others. There is a greater willingness to reserve judgment and wait upon new evidence. It was in this receptive atmosphere that Hurzeler presented his new study of Oreopithecus.

The fossil has been known since 1872, when it was described by the French paleontologist Paul Gervais, who regarded it as an Old World monkey. Hurzeler, after studying the original fossil and later finds, has become convinced that Oreopithecus is the first manlike form discovered in the Tertiary Period—it is believed to date from the Miocene. He apparently bases this view upon certain technical features of the teeth, including the nonprojecting canines, the vertical bite and the shortened face. It must be noted, however, that only parts of the skull have been found, and its full shape cannot be reconstructed.

Oreopithecus is a lower "monkey," in popular terms. It is not a "man" in the sense that many reporters assumed it to be, in spite of "no tooth gaps, no apelike protruding jaw," and so on. There are fossil and still-living primates which would have no trouble in answering that description, yet I am sure no one would call them men.

So the substance of the story is that Hurzeler has revived interest in a problematical bit of bone we have long been fingering. For the successful reconstruction of the evolution of the horse in the Tertiary Period, paleontologists had thousands of fossil bones to study. Primatologists may therefore be forgiven their fumblings over great gaps of millions of years from which we do not possess a single complete monkey skeleton, let alone the skeleton of a human forerunner. For the whole Tertiary Period, which involves something like 60 to 80 million years, we have to read the story of primate evolution from a few handfuls of broken bones and teeth. Those fossils, moreover, are from places thousands of miles apart on the Old World land mass.

If we were able to follow every step of man's history backward into time, we would see him divested, rag by rag and stitch by stitch, of every vestige of his human garment. That divestment, however, would not occur all at one place. If we accept the evidence of evolution,

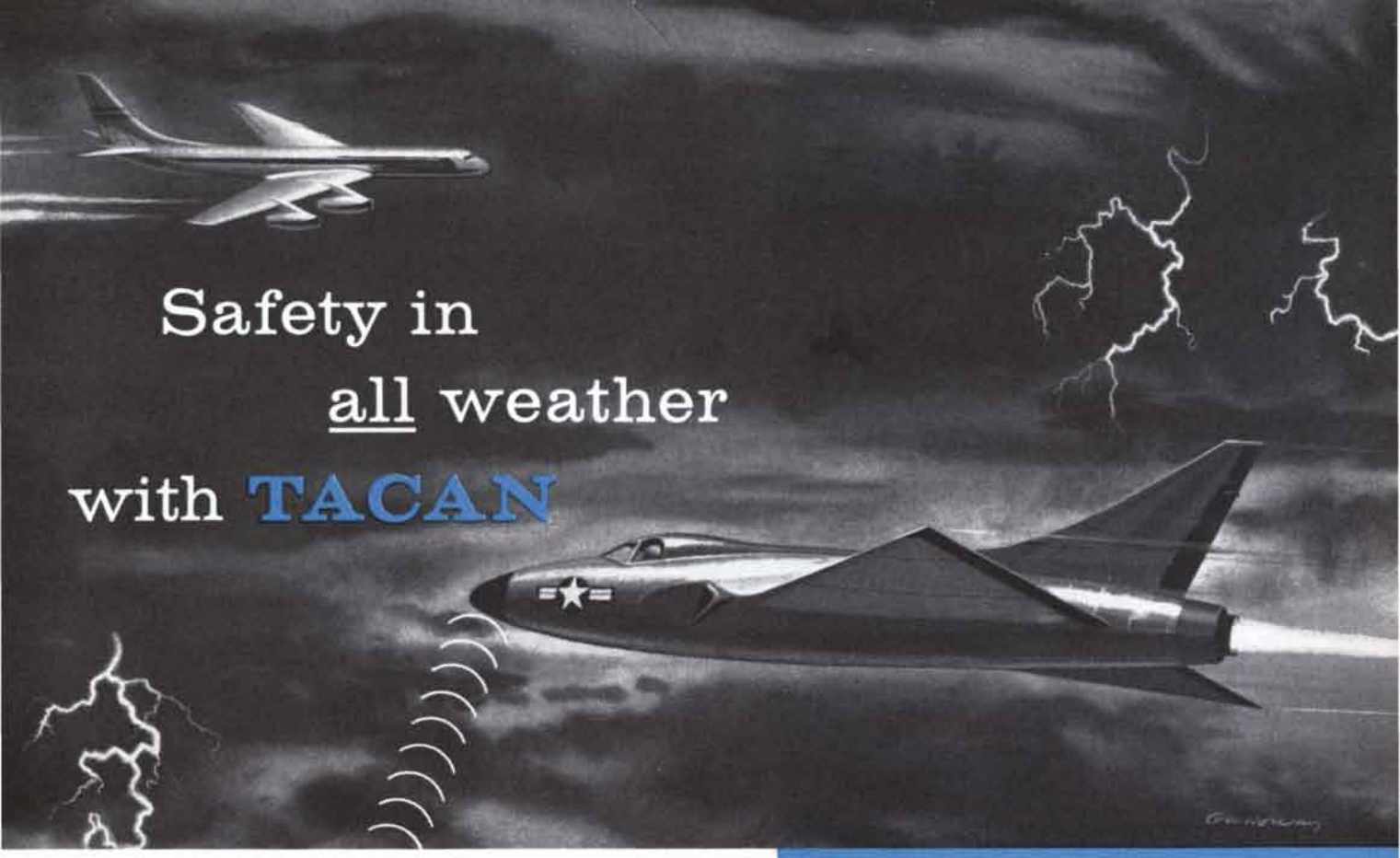
we must assume that man became man by degrees, that he emerged out of the animal world by the slow accumulation of human characters over long ages.

Our knowledge at present is not sufficient to establish precisely what anatomical traits are peculiarly human. As the British anatomist Solly Zuckerman has very aptly pointed out: "It is this general lack of structural specialization that makes the study of primate phylogeny so difficult." Some traits may have been paralleled in primate lines of evolution which did not lead to man; some traits called human may represent old generalized characters which have survived in man and been lost in some of his modern specialized relatives.

To continue our writing of the story of human evolution we are totally dependent upon finding additional fossils. Until further discoveries accumulate, each student will perhaps inevitably read a little of his own temperament into the record. Some, as Hurzeler has done, will dwell upon short faces, vertical front teeth and little rounded chins. They will catch glimpses of an elfin human figure which mocks us from a remote glade in the forest of time. Others, just as competent, will say that this elusive homuncular elf is a dream spun from our disguised human longing for an ancestor like ourselves. They will say that in the living primate world around us there are lemurs with short faces and vertical teeth, that there are monkeys which have the genuine faces of elves and the capacious craniums of little men.

In the end we may shake our heads, baffled, and have to admit that many lines of seeming relatives, rather than merely one, lead to man. It is as though we stood at the heart of a maze and no longer remembered how we had come there.

TARSIER was believed by the English anatomist F. Wood Jones to be a highly specialized descendant of the Eocene tarsioids, a group which he believed had also given rise to the human line. This specimen was brought from the Philippines to the Philadelphia Zoo.



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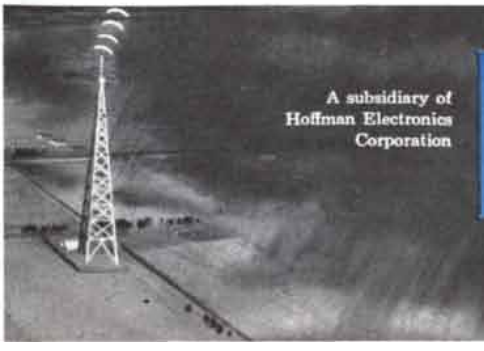

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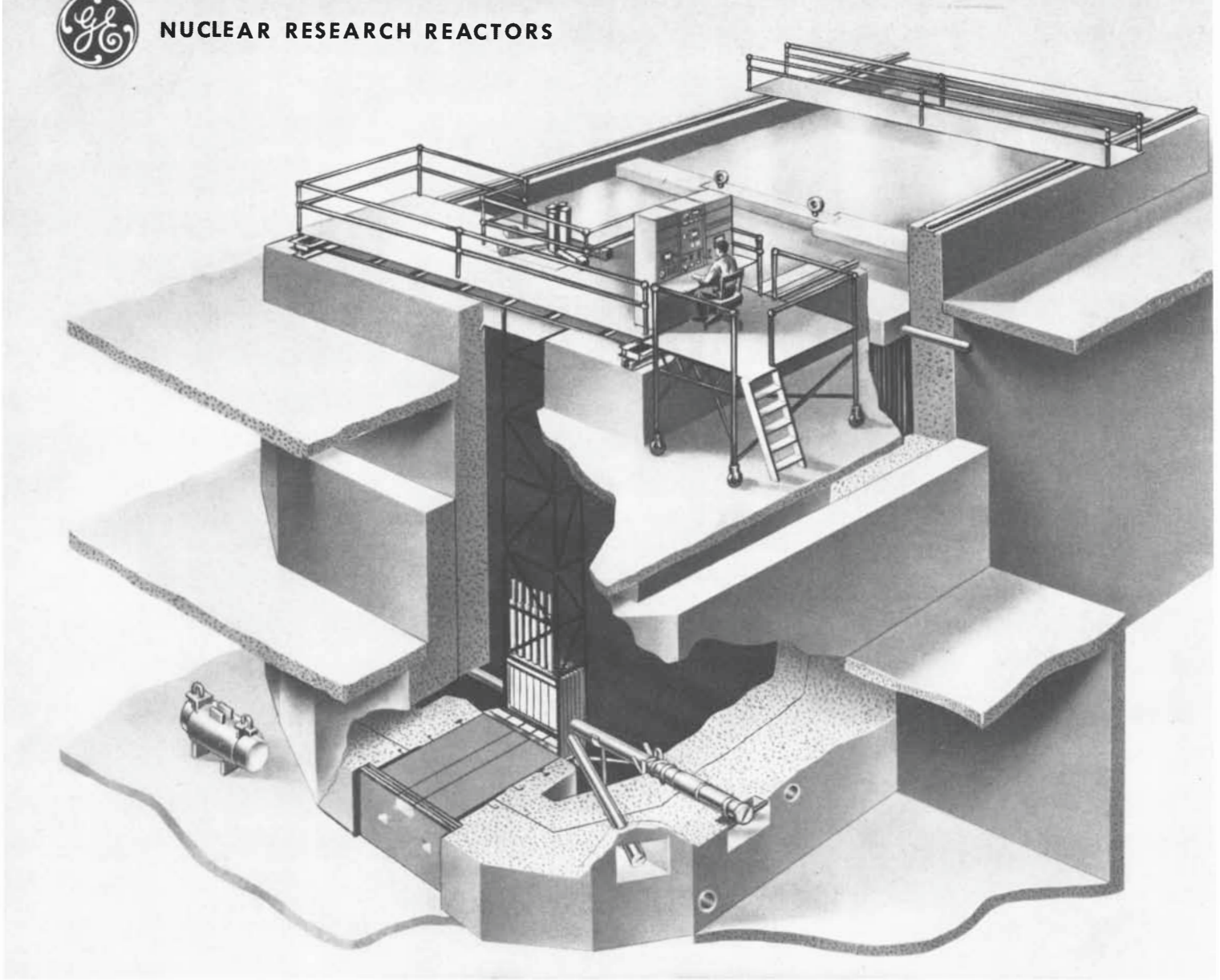

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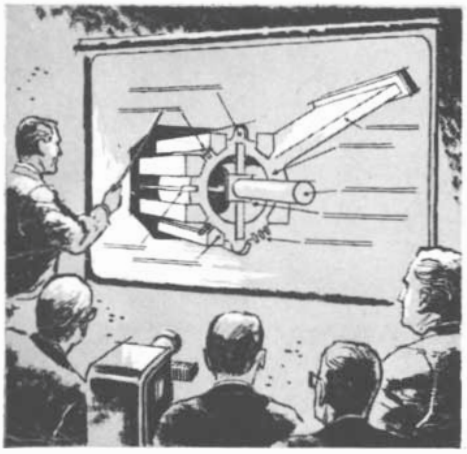

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