

次の文を読み、設問A～Iに答えなさい。星印(*)のついた単語には文末に訳注があります。

I was just a geologist* looking for a retirement hobby when I found Drimolen* in 1992. Poking around the grassy hills northwest of Johannesburg in search of a small fossil* site to excavate, I stumbled across this abandoned limeworks* and found baboon* and elephant fossils near a cave entrance. I was thrilled, but I had no idea that I would find a two-million-year-old hominid* tooth within a week or that this would become one of the richest hominid sites in southern Africa—a region dotted with important sites. My hobby exploded on me.

So far we've excavated about 5 percent of the 20,000-square-foot Drimolen site, and already we've found almost 80 specimens of *Australopithecus robustus*—also known as *Paranthropus robustus*, meaning “beside man” and “strongly and stoutly built.” The *robustus* name can be misleading; its body was no larger than a modern chimpanzee's. Its jaws, premolars*, and molars*, however, were massive—much larger than those of a modern chimp or human, or of all but one other closely related hominid, East Africa's *Australopithecus boisei*. Even though its evolutionary* line dead-ended, *A. robustus* lived successfully for a million years—eight times the reign* so far of modern humans—and even coexisted with early species in the *Homo* genus. So the “beside man” designation* certainly fits.

As with other early hominids in southern Africa, we find *A. robustus* fossils only in caves, where their remains accumulated for reasons we're still piecing together. At Drimolen many of the specimens we've found have been juveniles* and infants, perhaps because their smaller size made them easier prey for carnivores* like saber*-toothed cats and leopards. One popular theory is that in order to

avoid competition from scavengers* like hyenas, leopards ate their prey in trees that clustered* near caves, and the remains of their meals fell into the cave entrances. I think it's more likely that the cats cached* their prey in the caves.

However the bones got there, we know what happened in caves like this once they did. After collecting in an upper chamber, bones and sediment* were washed by flash floods into a lower cavern*, where they gathered in what's called a "talus" or "debris cone". As lime-bearing water dripped onto the cone from the cavern's roof, the material slowly calcified into a hard rock called breccia*. This is what we find—huge blocks of breccia brimming with fossils, mostly small animals like rodents* but also larger animals like antelopes*, elephants, cats, and baboons. In fact, it's the animals we find that help us determine how old hominid fossils are, since many animals have identifiable evolutionary adaptations within specific frames of time. What we'd really like to find are some pig fossils: During this period ancient pigs changed so rapidly and distinctly that they make great timekeepers.

About 2.5 million years ago southern Africa was drying. Although some trees remained near watercourses*, the forest largely turned into grassland, and animals moved, adapted, or died out. For *A. robustus*, defending its territory, this meant living on tough foods like roots, tubers*, and seeds instead of softer foods like fruit. The hominids developed large jaws and molars to handle this fare*; males had such huge jaws that their muscles were attached to bony crests on top of their skulls*. Females did not have these crests, and their jaws and teeth were as much as a third smaller than males'—a greater difference than we had previously seen. These finds—especially the female skull—give us a much better picture of the species.

What's better than finding one hominid species in a dig site? If you

say, “Finding two hominid species,” we could have an interesting conversation. We did find two species at Drimolen—*A. robustus* and an undetermined species of *Homo* that lived at the same time—and it’s both a blessing and a curse. (中略) If we can’t tell the bones apart, how do we know we’ve found two species? Simple: teeth. They’re like a species’ fingerprints, often giving us an unmistakable identification where bones do not. (中略) Tooth enamel is the most durable biological substance known, so teeth are more likely than bones to survive a million-plus-year burial—in fact, most of the world’s hominid fossils are teeth.

So the handful of *Homo* teeth we’ve found at Drimolen have made it impossible to definitively identify many of our bones as *A. robustus*. When bones and teeth are found together, though, we infer that they were likely from the same individual. (中略)

We even found some sharpened bone points, most likely from bones used as digging tools. We believe *A. robustus* used bone tools and probably used these particular ones, but again, because *Homo* fossils were found here, it’s impossible to be certain. We’d practically have to find a tool clenched* between teeth to know for sure who used it.

Despite the questions, the more we find the more we stand to learn—about how *A. robustus* lived, how the species coexisted with *Homo*, and why it became extinct as *Homo* evolved*. I’ll be long gone before Drimolen is thoroughly excavated and studied, but many answers—and no doubt more questions—will come from this site.

(Andrè W. Keyser 著: “The Dawn of Humans. New Finds in South Africa.”, National Geographic, Vol. 197, No. 5, May 2000 から引用, 一部 改変)

訳 注

geologist : 地質学者

Drimolen : 南アフリカの一地方

fossil : 化石

limework : lime ; 石灰

baboon : 動物のヒヒ

hominid : 1. pertaining (…に直接関係がある) to the family of humans (Homindae). 2. a living or extinct human or humanlike type.

Hominidae ; ヒト科 *Homo* ; ヒト属

premolar : 歯の小白歯

molar : 歯の大臼歯

evolutionary : 進化(論)的な

reign : 支配, 君臨

designation : 称号

juvenile : 少年少女, 若い

carnivore : 肉食獣

saber : サーベル, 騎兵刀

scavenger : 掃除屋, 死体に群がる動物(ハゲタカなど)

cluster : 群生する

cache : 隠す

sediment : 沈殿物, 流送土砂

cavern : (大きな)ほら穴, 洞穴

breccia : 角礫岩

rodent : 齧歯動物(ネズミ, リス, ビーバーなど)

antelope : アンテロープ, かもしか

watercourse : 川, 水路

tuber : 塊茎

fare : 食物

skull : 頭蓋骨

clench : (歯を)くいしばる, 口を堅く結ぶ

evolve : 進化させる, 発展する, 進行する

設 問

- A : *Paranthropus robustus* は beside man という名称が適切である理由を
答案用紙 2-1 のA欄に日本語 75 字以内で説明しなさい。
- B : 子供の化石が何故、沢山見つかるのか、その理由を答案用紙 2-1 の
B欄に日本語 30 字以内で説明しなさい。
- C : 一般的に化石は何故、洞窟で見つかるのか、その理由を答案用紙
2-1 のC欄に日本語 90 字以内で説明しなさい。
- D : 本文で述べられている洞窟における化石の形成過程を答案用紙 2-1
のD欄に日本語 150 字以内で説明しなさい。
- E : 化石の形成された年代の推定方法と、その際にとくに有用な手がかりを、
答案用紙 2-1 のE欄に日本語 100 字以内で説明しなさい。
- F : hominid が丈夫なアゴと歯を持つようになった理由を、答案用紙
2-2 のF欄に日本語 100 字以内で説明しなさい。
- G : 同じ場所で多種類の化石が発見されると、著者はどのように考えるのか、
答案用紙 2-2 のG欄に日本語 75 字以内で説明しなさい。
- H : 古生物学の研究で歯が重要視される理由を、答案用紙 2-2 のH欄に
日本語 100 字以内で説明しなさい。
- I : この文章を基礎に、現代の食生活からみて、今後、人類のアゴはどのよう
な変化が予想されるか、答案用紙 2-2 のI欄に日本語 75 字以内で説
明しなさい。

注) イタリック体はそのままよい。

注) “ ” は訳さなくて良い。