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## The Bow in the Groves of India

OTTO STEINMAYER

**N**OW I LIVE IN Sarawak. When I worked in smoky Kuala Lumpur, I could return to the village once a year, and I always used to bring a classical author with me, for I had little other time to read Latin or Greek. I was on the bus from Lundu town back to the kampong, reading that year's choice, Virgil's *Georgics*, and I looked up from these lines, which I quote again below:

*Aut quos Oceano propior gerit India lucos,  
extremi sinus orbis, ubi aëra uincere summum  
arboris haud ullae iactu potuere sagittae?*

The earth near the road is either rocky or swampy. Some places the trees crowd up to the road; other places the land has been cleared back two hundred yards, where a graveyard is or a rice-field used to be, so that you can see as it were a cross section of the interior of the forest and examine the tall and slender individual trunks.

It was a magnificent coincidence. There they were together, Virgil's description and the trees he was describing. These things happen all the time if you're ready for them. This fortunate meeting of text and trees set me on a train of queries and reflections that led me to what I have written here.

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Not the least remarkable of all the remarkable features of Homer's poetry is the sense he gives us of the broad space of the earth. And yet Homer accommodates that space to the human scale—man, and how far he can walk or sail in a day, is the measure of it. The Homeric traveler wandered far and wide. Of course Odysseus saw most of the world. Menelaus may have (in a variant reading) seen the Arabs as well as the Egyptians,<sup>1</sup> both heroes managed to reach home with time left for a peaceful retirement. If with Homer we may be allowed to mention the composer of the *Hymn to Dionysus*, we note that poet's knowledge of the far north in the persons

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of the Hyperboreans, to whom the pirates contemplate selling the kidnapped god.<sup>2</sup>

But the mind of Homer—like that of the man who need only think “let me be there, or there,” and *is there*<sup>3</sup>—goes in imagination even further beyond, where none of his human characters, and none of his audience, had ever been: to the land of the Ethiopians, to Elysium, to Calypso’s remote island, and to where Atlas lives, at the edges of the earth,<sup>4</sup> to the stream of Ocean and to its depths, beneath the earth to Tartarus, and above it to the heights of Olympus, which, since the young Hephaistos spent a whole day falling from its summit, we may well understand to be no earthly mountain but, rather, high ground of the celestial plain.<sup>5</sup>

Among Roman poems, Virgil’s *Georgics* perhaps best recreate Homer’s sense of the earth’s immensity. The *Georgics* are, indeed, a poem about Earth and its fruits.

Virgil includes in the *Georgics* the farthest lands he has heard of: Germany, Scythia, Britain, Egypt, Libya, Persia, Babylonia, Bactria. Some of these were well known to the Romans; Parthia, for example, by its irritating independence. Others were mythical, such as Olympus, Tartarus, and Hyperborea. Still others, dimly perceived to exist in fact, struck the Roman imagination with more avid wonder than did those stock places of legend.

Homer’s universe is flat. Virgil has brought his world up to date with the awesome image of our earth as a globe floating in space:

*hic uertex nobis semper sublimis; at illum  
sub pedibus Styx atra uidet Manesque profundi.*

. . . . .  
*illic, ut perhibent, aut intempesta silet nox  
semper et obtenta densentur nocte tenebrae;  
aut redit a nobis Aurora diemque reducit,  
nosque ubi primus equis Oriens adflauit anhelis  
illic sera rubens accendit lumina Vesper.*

(1.242–43, 248–51)

This pole is always high above us; but black Styx and the Shades of the dead below see that pole beneath their feet . . . . There, so they say, either the dead of night lies quiet forever, and under the spread of night the darkness thickens, or Dawn returns from there to us and brings back day, and when the

Rising Sun first breathes on us with his panting horses, there  
the ruddy Evening Star kindles the late lamps [of night].

This is the world of the astronomers: Aristarchus' of Samos and Eratosthenes' world. This vision whose confirmation we have all shared through photographs radioed back to our planet is modern science's most wonderful contribution to our sensibility.

At these "round earth's imagin'd corners" the Romans knew China<sup>6</sup> and India to exist, but information about those lands was scant, contradictory, and often patently fabulous. The ancient geographers are constantly apologizing to their readers for these failings, of which they were well aware. The scant material they repeated perhaps reached only scholars.

Poets try to bridge such chasms. Turning to the second book of the *Georgics* we find the following lines: "Or why should I mention . . ." says Virgil

*aut quos Oceano propior gerit India lucos,  
extremi sinus orbis, ubi aëra uincere summum  
arboris haud ullae iactu potuere sagittae?*

(2.122–124)

. . . the groves that India close to Ocean bears, a recess of the farthest circle of the world, where not a single arrow in its flight has been able to conquer the loft beyond the summit of a tree?

No source for this particular way of measuring a tree's height by bowshot has been traced,<sup>7</sup> though Virgil followed Theophrastus closely regarding other details of trees.<sup>8</sup> Virgil spent much effort researching general lore for his poetry, as Servius attests.

In this modern age when the ancient and dwindling rainforests of tropical Asia are on everyone's mind, we know that the trees they bear are of great height compared to those of our familiar temperate forests. If, however, we were to visit the tropics ourselves and have a look at the trees, or if we were to look up the canopy's average level above the ground, we would be inclined to doubt that arrows shot from a bow by the average archer fell back to earth before reaching through branches to leafless blue sky. We might even believe that Virgil, trusting the Common Reader's conjectured ignorance of things Farthest Indian, here indulges in a bit of hyperbole. Poets need not tell us the truth, but they insist on

that privilege of *quidlibet audendi*—“daring whatever they feel like.”

The bow of the ancient Mediterranean was a powerful weapon. Odysseus’ bow, you recall, was of such rigidity that only the hero himself could bend it. Soldiers measured distance by the extent they could expect an arrow to fly and, presumably, wound.<sup>10</sup> Their references to this *toxouma* cannot allow us precisely to determine that distance; but it’s likely that an average bowshot, in a low arc intended to hit a target on the ground, might have been 160 meters or more.

The mathematics required to derive a vertical reach from this figure were beyond me. On my suggestion, Professor Michael Deakin, of the Department of Mathematics, Monash University, explored the problem, which turned out to present some unexpected complexities.<sup>11</sup> We omit here to repeat the calculations. The equations suggest that an arrow shot straight up ought to reach about half the maximum distance it can cover horizontally, when shot at an angle of 45 degrees. If a hundred yards, this exceeds the height of even a Californian Sequoia.

When an English-speaking scholar thinks of traditional archery, what comes to mind? Agincourt, *Henry V*, and the entire body of legend surrounding it. The longbow has the reputation of being the medieval equivalent of a high-powered sniper’s rifle. However, a British scientist in a summary of research on the physics of many actual longbows found in the wreck of Henry VIII’s *Mary Rose* reports that despite the bows’ heavy pull weights, ranging from 45 to 80 kilograms, an arrow shot from such a bow could theoretically travel from 200 to 300 meters, and its actual range, after accounting for the drag of air, would average 150 to 200 meters. Sufficiently impressive, though hardly miraculous. We can take the English longbow as a standard for the limit of performance of the wooden self-bow.<sup>12</sup>

Only a handful of Greek heroes or their enemies, according to Homer, used the bow at the siege of Troy. Their feelings towards the bow were mixed. On the one hand, they honored bowmen such as Teucer, who shelters behind Ajax’s great shield, and (eventually) Philoctetes. For Teucer’s benefit an archery contest is included in Patroclus’ funeral games. Yet if the arrows came from the other side, then the bow was a blackguard coward’s weapon. Two instances are crucial to the Troy story. In *Iliad* 4, Pandaros, egged on by Athena, wounds Menelaus, spoils the single combat,

and sets the two armies fighting again. After the *Iliad*, Paris and Apollo kill Achilles with an arrow wound to his heel, his only vulnerable part. In another signal episode, Paris wounds Diomedes with an arrow from hiding. Paris jumps out and exults, and Diomedes begins his reply with a string of insults, beginning with "bowman," and going on to say, in effect, that if Paris would only come out and fight like a man, hand to hand, he'd sing a different tune.<sup>13</sup>

In classical warfare the bow seems to have been an auxiliary's weapon<sup>14</sup>—one still none too highly respected. While it would be wrong to suggest that the ancients were unfamiliar with the bow and its potential, one may note that they hardly mention it in practical discourses of hunting. Xenophon's *Cynegetica* gives us instructions for chasing hares with dogs and for taking deer and boar with javelins and spears, but no mention of the bow.

The Greeks reputed the bow and arrow an Asian weapon. Aeschylus figures the opposition of Persians and Greeks as the contest between the bow and the lance; Herodotus reports that the three most important subjects of the Persian noble youth's education were riding, shooting with the bow, and being truthful.<sup>15</sup> To the Romans the bow was infamous as the weapon of the ever-annoying Parthians.<sup>16</sup> The Parthians shot from horseback, a practice unknown to the Roman soldier—notwithstanding Tacitus' mention of *equite sagittario* (*Ann.* 2.16), for such archers belonged to Rome's Gaulish allies.

Of peoples still further east, a glance at the *Mahābhārata* shows that the bow was the standard weapon of the Indian warrior in that land's heroic age.

The bow of Aryan India was as powerful as that of the Mediterranean. If we take our image of it from the Sanskrit epics, we are again drawn to be sceptical about Virgil's statement measuring trees against a vertical bowshot. The chief trial at the *svayamvara* (or "self choice"—Indian princesses got to choose their own husbands) for Draupadī consisted in stringing a bow of extraordinary stiffness and shooting with it overhead clean through a contraption of pierced bronze plates.<sup>17</sup> The episode shows intriguing resemblances to the problem Penelope poses her suitors in the *Odyssey*. In the *Mahābhārata* a number of suitors are knocked off their feet by the recoil as they unsuccessfully try to string the challenge bow. At last Arjuna makes the winning shot and Draupadī weds all five of the Pāndavas.<sup>18</sup>

I would like to suggest that Virgil is not merely exaggerating, but possibly had something else in mind when he expressed the grandeur of the rainforest by his comparison to the bowshot. Perhaps Virgil is not referring at all to the weapon of the civilized Indian classical warrior, but to the hunting bow of non-Aryan tribal peoples who actually *lived* among those trees of which Virgil speaks.

Early contact between the western world and India took place over arduous land routes. In Augustus' times merchants drove a great trade to India sailing indirectly from the coast of Africa. Pepper at Rome was cheap enough to be sold at village markets wrapped up in shreds of remaindered poetry.<sup>19</sup> Westerners knew the chief Indian port of call as "Barygaza." This can be easily identified as modern Bharuch in the Gulf of Khambhat north of Bombay, at the mouth of the river Narmada. In fact, Apollodotus, a king of Greek Bactria, briefly conquered this area.<sup>20</sup>

Other marts included more than a dozen towns southwards down the coast,<sup>21</sup> where along the seaward slopes of the Western Ghats there still grows a remnant of tropical rainforest which botanists class with the forests of Southeast Asia, into which the Indian forest once continued.<sup>22</sup> In this expanse dwelt forest tribes of non-Aryan descent whose weapon was the bow. Invading Aryans and tribes displaced by Aryans pushed these peoples back into the interior, and today their small number of descendants can be found only in the remotest regions.

Little light reaches the tropical forest floor to nourish underwoods amid the massive trunks of trees and stems of climbing palms. But above ground level the foliage in a rainforest is very thick. A forest hunter almost never has a chance for a clear shot at any bird or animal more than a hundred feet away.<sup>23</sup> He has little need for carrying power. The bows of Asian rainforest natives such as the Chenchus and Reddis of India, the Veddas of Sri Lanka, and the Philippine Negritos tend to be relatively small, or when large, easy to pull.<sup>24</sup>

Ethnographic accounts of these forest peoples' bows are contradictory and hard to interpret. Now that the tribes that were studied in the beginning and middle of this century are extinct either as cultures, or, most tragically, as peoples, this evidence is impossible to check. Some scholars say that the forest dweller's bow had a range comparable to that of the longbow. The Veddah bow, tautened with the feet, was capable of sending an arrow 300 to 350

meters in free flight, and had an effective wounding range of 150 to 200 meters, certainly enough to clear the top of a tropical tree though never so tall.<sup>25</sup> However, other anthropologists say that the Veddas were very poor shots, and preferred to stalk as closely as possible to their game before they released.<sup>26</sup> The Reddis also seem to have preferred to shoot from as close as possible, and thus in hunting drove the animals through a narrow defile or forced them into water, and photographs of them armed show these bows not to be impressively massive.<sup>27</sup> As frontispiece to her book Allchin prints a photograph of a young Chenchu archer whose bow is plausibly light. The Semang of Malaya possessed fairly large bows, but used poisoned arrows and shot from a near position.<sup>28</sup> In my opinion, it is not likely that rainforest peoples ever practiced much distance-shooting.

For purposes of comparison one might cite the technique of the Bushmen of the Kalahari, who, even in the clear spaces of the desert, use poisoned arrows shot from weak bows close up.<sup>29</sup>

Furthermore, the rainforest hunter, whether he hunts with blowpipe or with bow and arrow, often smears his arrowhead or dart with poison prepared from local trees and creepers. It is not the mechanical hemorrhaging from the blow and cut of the missile that kills the animal, but the poison, which also has the effect of causing the animal to loose its hold on branch or vine.<sup>30</sup> Aristotle and Theophrastus were both aware that far-away peoples prepared and used arrow-poisons.<sup>31</sup>

In short, it is entirely true that no arrow *of the style proper to rainforest areas* such as Virgil describes can reach the top of a tree. No native of those areas would expect it to.

Thus, it may well be possible that Virgil had for his measure of the bowshot a source in a traveler who had been into those exact forest areas, among native peoples. Our hypothetical traveler need not have strayed far from civilization, for the boundaries between it and the primitive were narrow and porous. The *dharmaśāstras* or manuals of conduct enjoin the Brahmin to live simply in the forest during his third and retired stage of life, the epics talk of encounters between Hindus and tribesmen, and forest peoples were enough of a threat to civil quiet for Kautilya, the Indian Machiavelli (and, according to legend, the prime minister of the “Sandrocottus”—Chandragupta Maurya—who picked up pieces of Alexander’s conquests<sup>32</sup>), to give directions for corrupting and co-opting them.<sup>33</sup> Furthermore, the writer of the *Periplus of the*

*Red Sea* lists several kinds of imports into Barygaza that would have been of special interest to forest peoples.<sup>34</sup> Forest peoples, too, probably collected many of the natural products listed there for export to the west.<sup>35</sup>

In any stories that a traveler would be likely to tell about impressive heights of trees compared to bowshots, the bow he would be referring to would be this indigenous hunting weapon. The text itself of the *Georgics* does not mention any particular type of bow.

Perhaps, to many readers, the whole notion that Virgil should have searched to the edges of the earth for poetic material may seem itself far-fetched, and nuance of detail of little importance next to grand conceptions. But our imagination is excited and our feelings stirred by small and humble things. Sir Thomas Browne sent his mind far across space and time through a contemplation of the burnt remains of what he conjectured to be a Roman dead in Britain, “far from his fatherland”:

*. . . The Reliques of many lie like the ruines of Pompeys, in all parts of the earth; And when they arrive at your hands, these may seem to have wandered far, who in a direct and Meridian Travell, have but few miles of known Earth between your self and the Pole.*<sup>36</sup>

The community of pathos, its nearness to every person collapses space and time. It is such accumulation of petty things which makes the greatness of the whole. We like to ignore this truth, preferring instead to admire the vast completion and making a distinction of dignity between the large design and the small parts, between structure and detail, until “ornament” has come to seem a word of contempt, as if it were something slapped on that has no role in supporting the frame of a building, a poem, as if structure stripped of flesh were all. Nietzsche tells us that everything in a Greek or Christian building originally signified something, and warns us that what we now take for ornament—a thing whose value is solely aesthetic, and that of a low order—in the beginning was *meaning*, beauty entering only incidentally.<sup>37</sup>

Likewise, we scorn facts, and prefer “ideas.” Plato, who valued ideas more than reality, makes fun of poets by making Socrates maneuver the rhapsode Ion (in the dialogue named after him) into admitting that in knowing Homer he knows everything. But it’s not for the ideas that we read poetry, nor is Virgil going to make

sense of existence for us, as if he were still the medieval magician who bored through a rock in Naples. If, at whatever level, you are not reconciled with, and rejoice in, the startling variety and surprise of this world (which includes yourself), Virgil is not going to make you. A modern Indian critic thus sums up the classical Sanskrit view that says it best: "The aim of art is not to discover the nature of reality but to secure for us the highest experience of life."<sup>38</sup>

Poets love the world. Virgil laments the irrecoverable flow of time:

*... fugit irreparabile tempus  
singula dum capti circumvectamur amore.*

(3.284–85)

While we, overcome with love, seek to express the particular of everything.

We adore the poets. How then are we going to pass through their beautiful words to the more beautiful wonder?

How much information Virgil had about things in India might admit—as Browne would say—a wide solution. Virgil did not go to India; it is almost certain he never saw an Indian forest dweller's bow. But I hope I have made an argument that some information regarding that bow could well have come into Virgil's hands. When he includes such detail in his *Georgics*, he is no less wonderful than Homer, who recalls with accuracy the appearance of a boar's-tusk helmet long obsolete by his own time, getting it right over the span of seven hundred years,<sup>39</sup> though these years were not a void but filled with poets handing down this knowledge. However disguised or puzzling, Virgil divined a reality, and what the heart feels in response.

Virgil's way of writing poetry is no different from Eliot's stitching together of remembered lines of others, or from Joyce's careful forgery, out of a huge number of tiny facts, of a day in Dublin that by now has become as real as any day in history. Our own contemporary, the novelist Thomas Pynchon, is known—and we know little about him—to be a painstaking searcher of facts. "Nothing annoys him more," says one of his friends, "than to find out that he has been mistaken on some point."

Maybe William Carlos Williams was not being all *that* American, or even modern, when he announced his program of "no ideas

but in things.” Perhaps he was rather getting back to an ancient truth of poetry. The more I read poetry, the more ideas leave me cold. “Idea” means *image*, but we have degraded the word in modern usage to mean “abstract concept.” An idea, as things go now, is most often a political stance, not in relation to physical reality but to the bewildering flux of human opinion. Opinions, alas, can harm and kill, but they are not solid as rocks we can kick to demonstrate our and the world’s existence and meaning. An opinion does not connect the past to the present as can a smell or a place or an object.

Indeed, ideas are more often hostile to imagination than helpful. “Ideas” do nothing, excite nothing. The world is exciting, the things in it are exciting. They excite both the imagination and the feelings. In classical literary theory, the treatise *On the Sublime* (chap. 15) repeats the doctrine that the fantasy is the faculty through which we see, touch, hear what is not physically present to us. The fantasy, or imagination, is informed by the facts of the world.

As for Virgil, I see him viewing the great rainforests of India in his imagination, tingling with a sense of the immensity, variety, and freshness of his world. And in retracing the steps Virgil may have taken, or by which the facts that informed his vision may have come to him, I too feel that immensity, freshness, of his world and of mine, in a sense of celebration.

## NOTES

This paper is for Carol Rubenstein. Many thanks to Steve Hirsch for his editing and suggestions.

1. *Od.*4.84, in apparatus.

2. *Hymn* 7.29

3. *Il.*15.80–82

4. *Od.*1.49–54

5. *Il.*1.592

6. *Georgics* 2.121: *velleraque ut foliis depectant tenuia Seres?* “And [why should I recall] how the Chinese comb gossamer fleeces out from leaves?” An interesting line that merits a paper to itself. L. P. Wilkinson thinks that Virgil is referring here to Theophrastus *HP* 4.4.8. Wilkinson points out that unlike Theophrastus, Virgil knows that silk comes from the Chinese (*The Georgics of Virgil: A Critical Survey* [Cambridge 1969], 242n.). Theophrastus is confusing accounts of silk and of cotton. He signals his confusion when he says that the leaves of this “wool-plant” are shaped like mulberry leaves. Mulberry leaves are in fact the only things silkworms

will eat. Wilfred Schoff noticed the same confusion, and explained it in his translation of the *Periplus of the Erythraean Sea* (New York 1912), 263–268.

7. Prof. John Herington in a letter drew my attention to parallel passages cited by R. A. B. Mynors in his edition of the *Georgics* (Oxford 1990), which was unavailable to me. Quintus Curtius (9.1.9) speaks of the immense extent of the Indian forest and the height of the trees; Pliny the Elder (NH 7.21) repeats the theme of the bowshot: *arbores quidem tantae proceritatis traduntur ut sagittis superiaci nequeant*, “The trees are said to be of such height that they cannot be overshoot by arrows.” Pliny’s source may be Virgil (from which he has carefully removed the poetry); but it is certainly possible that both Virgil and Pliny are looking at a passage we have lost.

8. Wilkinson (note 6), 242.

9. See T. C. Whitmore, *Tropical Rain Forests of the Far East*, 2nd. ed. (Oxford 1986), 16: “Figure 2.1 shows a profile along a ridge in tropical lowland evergreen dipterocarp rain forest at Belalong in Brunei. The mature phase is represented to left and right, the canopy top being formed of three giant mature dipterocarps, *Shorea laevis*, *S. parvifolia*, and *Hopea bracteata* (45 m, 40 m, and 40 m tall respectively).”

10. See *Od.* 12.83–84, 101–102, where Kirke uses the measure of a bowshot to describe the distance from mid-strait to Skylla and to Kharybdis; *Hdt.* 4.139; *Thuc.* 7.30; *Xen. An.* 1.8.19; *Cyr.* 1.4.23.

11. See “Bow and Arrow in the Groves of Ind” *Function* 21 part 1 (Feb. 1997), 12–20. Copies can be obtained from the Department of Mathematics, Monash University, Clayton, Victoria 3168, Australia. Professor Deakin is a classical scholar as well as a mathematician. His recent *Mathematician and Martyr: A Biography of Hypatia of Alexandria* (also available from Monash University Mathematics Department) recommends itself to anyone not afraid to mix the two disciplines.

12. Gareth Rees, “The Longbow’s Deadly Secrets,” *New Scientist* 138, no. 1876 (5 June 1993), 24–25. A good article for a plain and efficient summary of the mechanics of the bow and arrow. For more information on pre-modern archery and on what the wooden bow could do, see S. T. Pope’s classic *Hunting with the Bow and Arrow* (1923). A “self-bow” is a bow whose body is shaped out of a single homogeneous piece of material, not laminated or reinforced.

13. *Il.* 11.368–395

14. So described at Caesar *B.G.* 2.10, 2.19, 7.31; Sallust, *Jug.* 46.7. Perhaps the bow was relegated to the auxiliaries because it was not strikingly effective. Accounts of men wounded or killed by arrows appear more often in ancient myth and literature than in history. I have tried without success to recall any famous *real* classical soldier wounded or killed by an arrow.

15. *Persians* 144–49; Herodotus 1.136.2.

16. See Catullus 11.6, Propertius 2.8.13–4, and Horace *Carm.* 2.13.14–19. One might also remember of the Parthians that it was they who kept the West and the East apart in antiquity. Unwilling to lose their lucrative position as middle-men in the overland trade, they deliberately let as little information as possible pass from one side to the other.

17. Plutarch [*Regum et Imperatorum Apophthegmata* 181B] tells the tale of an Indian archer, the best in the country, who was captured by Alexander. This bowman had the reputation of being able to shoot an arrow through a finger-ring.

18. *Adi Parva*, 1 §187–90.

19. Horace *Ep.* 2.1.270.
20. See William W. Tarn: *The Greeks in India and Bactria*, 2nd ed. (Cambridge 1951), 149.
21. See Pliny *NH* 6.96–106, and the *Periplus* 43–62.
22. Whitmore (note 9), 3.
23. “A master blowpiper can hit a monkey in treetop, provided the foliage is not too dense. He can shoot further sideways, level, than any sizeable target is ever likely to be distinguishable and tree-free in the underscrub.” Tom Harrison, *World Within: A Borneo Story* (London 1959), 88.
24. With regard to the Chenchus and the Veddas, see Bridget Allchin, *The Stone-Tipped Arrow: Late Stone-Age Hunters of the Tropical Old World* (London 1966), 110–13. She takes her information from Christoph von Fürer-Haimendorf’s *The Chenchus: Jungle Folk of the Deccan* (London 1943), which was unavailable to me. Regarding the Reddis, see Christoph and Elizabeth von Fürer-Haimendorf’s *The Reddis of the Bson Hills: A Study in Acculturation* (London 1945). They include specific measurements of a typical Reddi bow, string, arrows, and arrowheads. A. L. Kroeber’s comments on the bow of the Philippine Negritos are interesting (*Peoples of the Philippines*, American Museum of Natural History Handbook Series 8, 2nd ed., 1928 [reprinted Westport, Conn. 1973], 176–78):

With the comparative importance of iron in all native life, it might therefore be expected that even where the bow had been retained it would be a weapon of no very high quality. On the whole this is the fact. It is always a simple self bow, made usually from the wood of the *palma brava* or even of bamboo; it is lacking in backing or other reinforcement; and the cord is often of rattan or other vegetable fiber instead of that best of all bowstring materials—sinew. The weapon is long and narrow; among the Negrito it usually exceeds the height of the archer. The arrow is also long . . . . The strength of the Filipino bows is not usually very great. Even those made by the Negrito fall considerably below their reputations.

25. C. G. and B. Z. Seligman, *The Veddas* (Cambridge 1911) as reported by S.E. Semenov, *Prehistoric Technology, an Experimental Study of the Oldest Tools and Artefacts from Traces of Manufacture and Wear* (London 1964), 204.
26. Allchin (note 24), 127.
27. Von Fürer-Haimendorf (note 24), 70.
28. Allchin (note 24), 144.
29. Carleton S. Coon, *The Hunting Peoples* (Boston 1971), 80. The blowpipe, the other favorite weapon of the forest, requires surprisingly little effort to operate. I am most familiar with the Bornean version, but some Indian tribes also use the blowpipe, for example, the Mru of the Chittagong Hill Tracts. A sharp puff will send a dart well through a half-inch board of pine—even the usual Dayak’s cigarette habit doesn’t seem to harm his efficiency with the weapon. Such darts and light arrows have the advantage of passing through the air with no noise caused either by the shaft itself or by its crashing against leaves and branches. If the hunter misses, he can, as I myself have proved blowpiping at a squirrel on the top of a coconut palm, calmly reload and shoot again at an unwary prey. Coon, 79, says that the Andaman islander allows himself one shot at his quarry of wild pig. Close in the

island jungle, the noise of the bowstring slapping his powerful bowstave—whether he hit the pig or not—will frighten it away.

30. See Coon (note 29), 81. My father-in-law, Mr. Baki anak Resol of Lundu, Sarawak, who hunted with a blowpipe during the shotgun shell-deprived years of World War II, affirms this from his experience.

31. Aristotle [*Mirabilia* 837a13] tells how they were used by the Celts. Theophrastus (reported by Aelian at *N.A.* 9.15, where Aelian tells how the Scythians use some kind of human blood serum for arrow poison) wrote on the topic; but no such passage is found in any of his extant works. See note on loc. cit. to Loeb edition of Aelian, trans. A. F. Scholfield (Cambridge, Mass. 1959). Modern Bornean hunting poisons are prepared from plants that include the *ipoh* tree (*Antiaris toxicaria*) and various species of *Strychnos*.

Homer is the first to mention arrow poison, at *Od.* 1.260–264. Athena, in the guise of Mentès, is yarning to Telemachus: “. . . for Odysseus went [to Ephura] in his swift ship seeking a man-killing drug, so that he could smear his bronze arrows with it. But [Ilos] did not give it to him, because he feared the vengeance of the eternal gods, but my father gave it to him; for he loved him dreadfully.” Though Odysseus does use the bow in his story to kill the suitors, arrow poison does not appear again. I think that if using arrow poison were a common practice in epic times, Homer surely would have mentioned in *Il.* 4 something about Menelaus’ anxiety over poisoning after receiving a scratch. Perhaps Athena speaks of arrow poison in order to hint at Odysseus’ character: he has no heroic scruples when he deals with enemies, but strives to survive.

Sophocles also famously refers to an arrow-poison, namely the blood of the Hydra in which Heracles dipped the arrow that killed Nessus, and later caused Heracles’ own death (*Trachiniae* 572ff.).

32. Tarn (note 20), 155, 168–69.

33. Kautilya, *Arthashastra*, trans. Dr. R. Shamasastri, 8th ed. (Mysore 1967), 46, 364, 376, 414.

34. 49, such as “mallow cloth [a coarse fabric] . . . thin clothing and inferior sorts, and bright-colored loincloths (*zônai*) of a cubit’s breadth.” Schoff remarks: “These were probably for the Bhîls, a Dravidian hill-tribe, who worked the carnelian mines then as now,” 190. Only a full reading of the *Periplus* can give one an idea of the scale and variety of ancient trade. A good modern edition has been published by Lionel Casson: *The Periplus Maris Erythraei. Text with Introduction, Translation, and Commentary* (Princeton 1989).

35. F. H. L. Dunn’s *Rainforest Collectors and Traders: A Study of Resource Utilization in Modern and Ancient Malaya*, Monographs of the Malaysian Branch, Royal Asiatic Society, No. 5 (Kuala Lumpur 1975) details how the rainforest natives collected and marketed their goods.

36. *Hydriotaphia*, or *Urne Buriall*, dedicatory letter.

37. *Human, All Too Human*, 218, as translated by R. J. Hollingdale in *The Nietzsche Reader* (Penguin).

38. M. Hiriyama: “The Main Aspects of Indian Aesthetics” in *An Introduction to Indian Poetics*, ed. V. Raghavan and Nagendra (Madras 1970), 10.

39. *Il.* 10.261–265. See Denys Page, *History and the Homeric Iliad* (Berkeley 1959), chap. 6, “Some Mycenaean Relics in the Iliad.”