ἀριθμὸν ἔξοχον σοφισμάτων

_Aeschylus, Prometheus Bound 459_
Thence to Trinacria's shore you bend your way,
Where graze thy herds, illustrious Source of day!
Sev'n herds, sev'n flocks enrich the sacred plains,
Each herd, each flock full fifty heads contains:
The wond'rous kind a length of age survey,
By breed increase not, nor by death decay.

*Pope's translation of Homer, Odyssey XII 127-131*
ARCHIMEDES
The Cattle Problem

in English verse
by
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&
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MERCATOR ⊕ MCMXCIX
ARCHIMEDES

THE CATTLE PROBLEM

a problem
that Archimedes conceived in verse and
posed to the specialists at Alexandria
in a letter to Eratosthenes of Cyrene
ΑΡΧΙΜΗΔΟΥΣ
ΠΡΟΒΛΗΜΑ ΒΟΕΙΚΟΝ

πρόβλημα

διπερ 'Αρχιμήδης ἐν ἐπιγραμματών εὑρὼν
tois ἐν 'Αλεξανδρέα ἐπι ταύτα πραγμα-
tευομένων ζητεῖν ἀπέστηλεν ἐν τῇ πρὸς
Ἐρατοσθένην τὸν Κυρηναίου ἐπιστολῇ
Πληθυν 'Ηλιαίων θεών, ὥς ξείνη, μέτρησεν
Φροντίδα ἐπιστήμας, εἰς μετέχεισι σοφίας,
πόσον ἄρ' ἐν πεδίοις Σικελίας ποτ' ἐβασκετο ϊόσου
Θριαμβεύσας τετραχώς οὐτ' Θεών δασσαμένη
χροίνη ἀλλάσσεται τὸ μὲν λευκόν γάλακτος,
κυνάξ' ἔτερου χρώματι λαμπτόμενον,
ἀλλὰ γε μὲν ξαφνίδ, τὸ δὲ ποιμένες. Ἔν ὄε ἐνάστω
οὖτ' ἔσαρξ ταύρων πλῦνει βραδέμνην
συμμετρίας τοίηδε τετευχότες ἀργοτρίχης μὲν
κυνάξιων ταύρων ἡ μισβί ὑδ' ἄνετο
καὶ ξαφνὸς σύμπασιν ἵππος, καὶ ξείνη, νόσσον,
ιῶτ' θυμόνς τὸ τετράτω ὑπὲρ τοὺς μὲν
μικτοχρόνων καὶ πέμπτων, ἔτι ξαφνίδας τὶ πᾶνιν.
Τούτῳ δ' ὑπολειτομένους ποιμνάχθεςτας ἄθροι
ἀργενεῖν ταύρων ἐκτὸς μέρει ἐβδομάτω τοῖς
καὶ ξαφνίδις αὐτοῖς πᾶνιν ἱσαξομένους.
Θηρείαν δ' ἐβουοὶ τάδ' ἐκλετοῦ λευκότριχης μὲν
ἡμαῖς συμπάσις κυνάξης ἀγέλης
τῷ τριτάτῳ τὸ μέρει καὶ τετράτῳ ἄτεικης ἰσαὶ
ιῶτ' θυμόνς τῷ τετράτῳ τῷ πᾶλιν
μικτοχρόνῳ καὶ πέμπτῳ ὡμοίῳ μέρει ἱσαξομένῳ
τὸν ταύρον πάσανοι εἰς νομδὸν ἑρχομέναινος.
Εὔνοο δ' ἀγέλης πέμπτῳ μέρει ὑπὲρ καὶ ἐκτὸς
ποιμνίαι ἱσαξομένοι πλάθος ἐχόν τετραχως.
Εὐθαί δ' ἀρίθμου μέρους τρίτου ἡ μισβί Ἰσαὶ
ἀργενεῖς ἀγέλης ἐβδομάτῳ τῇ μέρει.
Εὔνοε, ὅπερ δ', Ἡλλοίῳ θεῖες τόσαι, ἄτεικῆς εἰπὼν,
χορεῖς μὲν ταύρων ζατρείδες ἀγίουμεν,
χορεῖς δ' αὖ, μῆλαις ὅτι κατὰ χροίνην ἐκπονται,
οἷς ἄθροις καὶ λόγοις ὅσα ἀρισθοῦν ἀδήας,
οὐ μὴν τῷ γε σοφίας ἑναρχίμοις. Ἀλλ' τί Φράγεω
καὶ πάντας θεῶν Ἡλλόιο πάλιν.
Ἀργότριχας ταύρων μὲν ἐπεί μεξαίωθα πλῆθιν
κυνάξις, ἰσακτ' ἐπιπέδου ἑσθιστροί
εἰς βάθος εἰς εὐρύς τε, τὰ δ' αὖ περιμένει πᾶντι
πυκνάντα πλῆθος Θριαμβότι πεδία.
Εὐθαί δ' αὖτ' εἰς έν καὶ ποιμνίαι ἀδρασιδθέντες
ἰσακτ' ἀμβαλάδων ἐξ ἐνδ' ἀρχήμοιον
σχῆμα τελειώμενος τὸ πρικόλαπεδον ὄστε προσοῦν
ἀλλοχρόνων ταύρων ὄτ' ἐπιπέδημοι.
Ταῦτα συνεξιμοῦν καὶ ἐν πραπόδεστῳ ἀβρόσιᾳ
καὶ πληθέως ἁποδοὸς, ξείνη, τὰ πάντα μέτρα
ἐχούσα κυνάξιον νικηθὸς θεῖοι τε πάντως
κυνεμένοις ταῦτῃ γ' ἐμπνεοῦ ἐν σοφία.
The Sun god's cattle, friend, apply thy care
to count their number, hast thou wisdom's share.
They grazed of old on the Thrinacian floor
of Sic'ly's island, herded into four,
colour by colour: one herd white as cream,
the next in coats glowing with ebon gleam,
brown-skinned the third, and stained with spots the last.
Each herd saw bulls in power unsurpassed,
in ratios these: count half the ebon-hued,
add one third more, then all the brown include;
thus, friend, canst thou the white bulls' number tell.
The ebon did the brown exceed as well,
now by a fourth and fifth part of the stained.
To know the spotted—all bulls that remained—
reckon again the brown bulls, and unite
these with a sixth and seventh of the white.
Among the cows, the tale of silver-haired
was, when with bulls and cows of black compared,
exactly one in three plus one in four.
The black cows counted one in four once more,
plus now a fifth, of the bespeckled breed
when, bulls withal, they wandered out to feed.
The speckled cows tallied a fifth and sixth
of all the brown-haired, males and females mixed.
Lastly, the brown cows numbered half a third
and one in seven of the silver herd.
Tell'st thou unfailingly how many head
the Sun possessed, o friend, both bulls well-fed
and cows of ev'ry colour—no-one will
deny that thou hast numbers' art and skill,
though not yet dost thou rank among the wise.
But come! also the foll'wing recognise.
Whene'er the Sun god's white bulls joined the black,
their multitude would gather in a pack
of equal length and breadth, and squarely throng
Thrinacia's territory broad and long.
But when the brown bulls mingled with the flecked,
in rows growing from one would they collect,
forming a perfect triangle, with ne'er
a differ rent-coloured bull, and none to spare.
Friend, canst thou analyse this in thy mind,
and of these masses all the measures find,
go forth in glory! be assured all deem
thy wisdom in this discipline supreme!
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