# DARIUS

# I THE GREAT

## By: Prof. A. Shapur Shahbazi

**Abstract:** Darius' Empire with a population of some 35 million people over 70 distinct ethnic groups, which was stretched some 2,600 miles from the Indus River in the east and the Aegean sea in the west, and 2,300 mile from Armenia in the north to the first cataract of the Nile in the south.



Darius I the Great was the third <u>Achaemenid</u> king of kings (r. 29 September 522-October 486 B.C.E.). He was born in 550 B.C.E. (cf. Herodotus, 1.209), the eldest son of Vištâspa (Hystaspes) and \*Vardagauna (Gk. Rhodog(o)u,nê, NPers. Golgûn; Justi, *Namenbuch*, p. 261; Hinz, 1975a, p. 270). Before his accession to the throne he served Cambyses (529-22 B.C.E.) as a spear bearer in Egypt (Herodotus, 3.139).

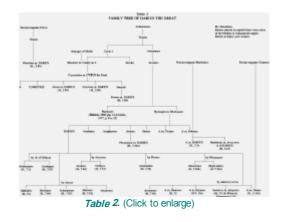
### Sources.

The primary sources are of four basic kinds. First, there is <u>Darius' record relief</u> (DB) at Bîsotûn (q.v.; for the Old Persian text, see now Schmitt; for the Babylonian text, with some variants, see von Voigtlander); an additional fragment of the relief (Seidl) and one of the Babylonian inscription (von Voigtlander, pp. 63-65) are also known, as are substantial portions of an Aramaic version (Greenfield and Porten). The second category includes texts and monuments from Persepolis (Schmidt; Kent, *Old Persian*; Cameron; Hallock, 1969; cf. evaluations by Lewis, 1977, pp. 4-

26; idem, 1990; Bivar, *CAH2*, pp. 204-10; Tuplin, pp. 115 ff.), Susa (Schmidt, I, pp. 29-33), Babylon (Strassmaier; Oppenheim, pp. 559-60; Cardascia, pp. 5-8; Haerinck; van Dijk and Mayer, no. 88; Stolper, 1985, esp. pp. 41-60; Dandamayev, 1992, pp. 3, 5, 10-11 and passim), and Egypt (Posener; Schmidt, I, pp. 26-27; Bresciani, pp. 507-09; Ray, pp. 262-66; Hinz, 1975b; Lloyd). A fragmentary Old Persian inscription from Gherla, Rumania (Harmatta), and a letter from Darius to Gadates, preserved in a Greek text of the Roman period (F. Lochner-Hüttenbach, in Brandenstein and Mayrhofer, pp. 91-98) also belong to this category. The third source is a detailed and colorful narrative by Herodotus (books 3-6; cf. How and Wells). Finally, there are briefer notices by other classical authors (listed and analyzed by Meyer, pp. 3-7; Prašek, II, pp. 10-11; Drews, pp. 20 ff.) and a few references in the Bible (g.v. i.).

#### Accounts of Darius' accession and rebellions in the provinces

Darius began his "autobiography" in the trilingual (Old Persian, Elamite, Babylonian) inscription on the rock face at Bîsotûn with a genealogy purporting to establish his right to the Achaemenid throne (DB 1.1-11; Table 2), followed by a long account of the Magian usurper Gaumâta (DB 1.26-61). According to this version, after Gaumâta's death at the hands of Darius some provincial magnates rebelled, but Darius slew them all (DB 1.72-3.92). Thereafter his rule was established throughout the empire. He immediately published at Bîsotûn and elsewhere inscriptions providing an exact record of these events, explaining the causes of the rebellions (DB 4.34: "Falsehood [*drauga*-] made them rebellious"; see Schaeder, 1941, pp. 31-32) and his own success (DB 4.61-67).



In Herodotus' version Cambyses left Patizeithes, a Magian, as "steward of his household" (3.61, 3.63, 3.65) and went to Egypt, whence he sent a trusted Persian, Prexaspes, to murder his full brother Smerdis (i.e., Bardiya, g.v.) in secret (3.31). Only a few Persians, among them Darius, knew of this murder, so that Patizeithes was able to place upon the throne his own brother, also called Smerdis and "greatly resembling the son of Cyrus" (3.61). The imposter was discovered, in the eighth month of his reign, by the Persian noble Otanes (Utâna; 3.68). Five other Persian nobles, Aspathines (Gobryas (Gau-buruva), Intaphernes (Vindafarnah), Megabyzus (Bagabuxša), and Hydarnes (Vidarna), joined Otanes; Darius had also "hastened to Susa to accomplish the death of the Magian" (3.71). The seven exchanged oaths and at Darius' urging entered the imposter's castle and slew him and his brother (3.71-78); then, joined by other Persians, they slaughtered many Magians (3.71). According to Herodotus, "All peoples of Asia mourned his loss exceedingly, save only the Persians" (3.67), who continued to celebrate the anniversary of this slaughter (3.79). The seven leaders then debated the most suitable mode of government for Persia (for a detailed discussion, see Gschnitzer, 1977; idem, 1988). Otanes urged democracy, but Darius' view that monarchy was "the rule of the very best man in the whole state" prevailed (3.80-88). The seven then resolved to ride out together the next morning and to accept as ruler of the kingdom the one of their number whose horse neighed first after the sun was up (3.84). Darius' groom, Oebares, devised a stratagem that caused his master's horse to neigh first, whereupon Darius was saluted as king (3.84; cf. Widengren, 1959, pp. 244, 255). About the ensuing rebellions Herodotus remarked only that there had been a period of "troubles" after Cambyses' death (3.126), though he did include the story of Oroetes (see below), as well as a legendary account of the revolt of Babylon and its recapture through a stratagem (1.150-58).

Ctesias reported that before leaving for Egypt Cambyses had ordered a Magian named Spendadates to kill and impersonate Tanyoxarkes, the younger son of Cyrus and Amytis and satrap of the Bactrians, Chorasmians, Parthians, and Carmanians. After Cambyses' death Spendadates ascended the throne but was betrayed by one of his own associates. Then seven Persians, Ataphernes, Onaphas, Mardonius, Hydarnes, Norondabates, Barisses, and Darius, plotted and slew him, and Darius won the throne through the "horse trick." Since then the Persians had celebrated the anniversary of the slaughter of the Magians (Ctesias, in Jacoby, *Fragmente*, no. 688 frag. 13.18). Xenophon reported that Tanaoxares, identified as Cyrus' younger son and satrap of Media, Armenia, and Cadusia, had quarreled with Cambyses upon the accession of the latter (*Cyropaedia* 8.8.2), and Plato (*Leges* 3.694-95; *Epistulae* 7.332A) added that in the quarrel one had killed the other. According to Trogus (Justin, 1.9), the trusted friend chosen to kill the "son of Cyrus" was Cometes (i.e., Gaumâta), who did so after Cambyses' death and placed his own brother Oropastes ("who resembled Smerdis very much") on the throne. The rest follows Herodotus' version.

#### **Darius' veracity**

Most historians have accepted Darius' testimony as trustworthy and have used it to check and correct classical accounts (cf. Gershevitch), but others have argued for his mendacity (e.g., Balcer;

Bickerman and Tadmor; Boyce, Zoroastrianism II, pp. 78-89; Cook, pp. 8-9, 46-57; Culican, pp. 64-65; Dandamaev, 1963; Nyberg, pp. 74-75; Olmstead, 1938, pp. 392-416; idem, 1948, pp. 107-18; Rost, 1897a, pp. 107-10, 208-10; idem, 1897b; Wiesehöfer; Winckler; Young, pp. 53-62). The present author subscribes to the former view. In 1889 Hugo Winckler (p. 128) suggested that "perhaps" Darius had lied in claiming to be related to Cyrus the Great (cf. Rost, 1897a, p. 107; idem, 1897b). Subsequently such scholars as A. T. Olmstead, A. R. Burn, and Muhammad A. Dandamayev elaborated on this hypothesis. Their main arguments are of nine basic types. First, Darius' insistence that all his opponents lied arouses suspicion of his own trustworthiness, especially as Herodotus (3.72) had quoted Darius as defending a justifiable untruth (Olmstead, 1938, p. 397; cf. Dandamaev, 1976, p. 121; Balcer, p. 59). This assessment involves a highly biased interpretation of Darius' motives, whereas Herodotus' report is unreliable; not only did he comment elsewhere on the Persians' high regard for truth (1.136), but also it has been suggested that this casuistry "is purely Greek" (How and Wells, I, p. 276 n. 4; similarly Meyer, p. 35 n. 1). Second, it has been argued that Darius was not a royal prince, let alone the rightful heir (Olmstead, 1938, p. 394; Burn, p. 95). As Cambyses and Bardiya had left no sons, however, the nearest to the throne would have been Aršâma (g.v.), Darius' grandfather, who was then too old to take the field. His son Vištâspa (Hystaspes) was in charge of Parthia and Hyrcania (DB 2.92-98) and could not have led an army to Media undetected. The task thus fell to Darius, one of "the Achaemenids" whom Cambyses had besought on his deathbed to restore the Persian monarchy (Herodotus, 3.65, 3.73). Darius' right was supported by other living Achaemenids, including Bardiya's daughter and sisters (Herodotus, 3.88). Third, it has been doubted that a mighty satrap, a son of Cyrus (i.e., Bardiya), could disappear without arousing suspicion (Olmstead, 1938, p. 396; Nyberg, pp. 75-76; Dandamaev, 1976, p. 116; Boyce, II, pp. 80-81). Nevertheless, with the help of court officals the death of Artaxerxes II (q.v.) was kept secret for nearly a year (Polyaenus, Stratagemata 7.17) and in the Islamic period that of the Buyid 'Azad-al-Dawla (g.v.) for three months (Margoliouth and Amedroz, Eclipse VI, pp. 78-79).

The fourth argument is based on Herodotus' report that the "true" and "false" Bardiyas were so alike that even the former's mother and sisters were deceived (Olmstead, 1938, p. 396). Yet elsewhere Herodotus reported that Bardiya's mother had died much earlier (2.1) and that his sister, Queen Atossa (q.v), was kept under strict confinement by the false Bardiya precisely to prevent her from communicating with others (3.68; Shahbazi, 1971, p. 43). Fifth, the date Darius claimed for the slaying of Gaumâta was deemed by Olmstead (1938, pp. 397-98) not to agree with that in Babylonian documents, which give his reign as having lasted "one year and seven months," but Olmstead's chronology was proved incorrect by Arno Poebel (1939). Sixth, in his inscription Darius identified his opponents precisely, except for Gaumâta, whom he styled merely as "the Magian," giving the impression that the latter was fictitious (Dandamaev, 1976, p. 119; cf. Bickerman and Tadmor, pp. 246-61; Boyce, *Zoroastrianism* II, pp. 85-86). But in the Babylonian version of Darius' inscription at Bîsotûn (1.18) it is specified that Gaumâta was "a Mede, a Magian," which, incidentally, is evidence that he was not a priest but a Median nobleman from the tribe of the Magi (as Benveniste adduced in 1938, p. 17, with Herodotus, 1.101; it should be noted that in the Babylonian text, I. 23, Gaumâta's followers are called "nobles").

A seventh argument involves the Babylonian tablets, which, according to Olmstead (1938, p. 403), proved false Darius' repeated claim that he had made the majority of his expeditions "in the same year after I became King." Walther Hinz (1942), Richard Hallock (1960), and Riekele Borger have shown, however, that the period from Darius' first dated victory (13 December 522) to his last (28 December 521) fell within one year, including an intercalated month. Eighth, in Aeschylus' contemporary play *Persae* (773-76) Darius' ghost announces that after a son of Cyrus "ruled Mardos, a disgrace to his country and ancient throne, whom Artaphernes slew by guile." Olmstead argued that Aeschylus thus had no doubt that Mardos was a legitimate ruler (1938, p. 396; similarly Dandamaev, 1976, p. 120). But in fact Aeschylus merely indicated that Cambyses was followed by a disgraceful king officially known as Mardos (Bardiya); no legitimacy is implied (Burn, p. 94 n. 44). Finally, Darius' marriages to Bardiya's daughter and sisters have been interpreted as moves to gain necessary legitimacy (Olmstead, 1938, pp. 396-97). On the contrary, however, they are evidence of Darius' innocence of Bardiya's murder, for otherwise family vengeance would certainly not have permitted him to survive for thirty-six more years (Prašek, I, p. 265).

Other evidence confirms Darius' testimony. First, as J. V. Pra,šek (I, p. 265) noted, many foreigners. Greeks in particular, served Darius, and some wrote about his affairs unfavorably (e.g.

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stocke in particular, served Banas, and sente wrote about his analis anavorably (e.g., ioroignoio, c Herodotus, 3.118-19, 3.133, 4.43), yet none suggested that he was a usurper. Second, although a Persian king was expected to conduct his royal duties openly in the capital, the false Bardiya lived secluded in a castle in the mountains (between Holwân and Hamadân; Marquart, 1905, II, p. 159), and, fearing detection, he "never quitted the citadel nor ever gave audience to a Persian nobleman" (Herodotus, 3.68). To claim that this residence was, in fact, the summer capital (Dandamaev, 1976, p. 137) is to ignore the fact that the summer capital was in Ecbatana and that 29 September was too late to be summer in Media. Third, upon his accession the false Bardiya had abolished taxes and military service "for all nations under his rule for a period of three years" (Herodotus, 3.67) , the actions of a usurper desperate for popular support and fearful of the warrior nobility, who had the means to raise new armies. No Persian prince would have thus undermined royal authority (Widengren, 1968, p. 521). In addition, under Persian law the king was required to name a successor before leaving on a dangerous expedition. Cyrus had appointed Cambyses, and later Xerxes I (486-65) chose his uncle Artabanus (Herodotus, 1.208, 7.2, 7.52; cf. 7.53, 8.54). That Cambyses left Patizeithes, a Median official, as his viceroy (3.65) is evidence that his brother Bardiya was already dead. Poebel (1938, p. 314) thus concluded that "Darius, in full accord with his earnest claim to personal veracity, had no intention whatever to exaggerate, as has been assumed, nor that he consciously indulged in any inaccuracy, however small it might be" (sic).

#### Chronology of Darius' reign.

Darius' second and third regnal years were devoted to consolidating his authority. A fresh rebellion in Elam was suppressed by Gobryas (DB 5.3-14), and Oroetes, satrap of Sardis, was executed for the murders of Polycrates, tyrant of Samos; Mithrobates, satrap of Phrygia; and the latter's son (Herodotus, 3.120-29). Darius himself marched against "the rebellious Scythians" of Central Asia, who threatened the northern and eastern flanks of the empire; he crossed the Caspian Sea, defeated the group known as the Pointed-Hat Scythians (Saka tigraxauda), captured their "king," Skunxa, and installed a loyal leader in his stead (DB 5.20-33; for detailed commentary, see Shahbazi, 1982, pp. 189-96). On his return he added the image of Skunxa and an account of the Elamite and Scythian campaigns to the reliefs at Bîsotûn. In autumn 517 he traveled to Egypt and succeeded in pacifying the rebellious Egyptians by showing respect for their religion and past glory and by ordering the codification of their laws; in turn he received their obeisance and reverence (Polyaenus, Strategemata 7.11.7; Diodorus, 1.95.4-5; for details, see Bresciani, pp. 507-09; Ray, pp. 262-64). After he returned to Persia Darius executed Intaphemes for treason (Herodotus, 3.118-19) and sent a naval reconnaissance mission down the Kabul river to the Indus; it explored the eastern borderlands, Sind, the Indian Ocean, and the Red Sea and arrived in Egypt near modern Suez thirty months later (Hinz, 1976, p. 198; Bivar, CAH2, pp. 202-04). Following this expedition "Darius conquered the Indians [of Sind], and made use of the sea in those parts" (Herodotus, 4.44).

A major event in Darius' reign was his European expedition. The region from the Ukraine to the Aral Sea was the home of north Iranian tribes (Rostovtzeff; Vasmer) known collectively as Saka (Gk. Scythians). Some Saka had invaded Media (Herodotus, 1.103-06), others had slain Cyrus in war (1.201, 1.214), and some groups had revolted against Darius (DB 2.8). As long as they remained hostile his empire was in constant danger, and trade between Central Asia and the shores of the Black Sea was in peril (Meyer, pp. 97-99). The geography of Scythia was only vaguely known (Figure above), and it seemed feasible to plan a punitive campaign through the Balkans and the Ukraine, returning from the east, perhaps along the west coast of the Caspian Sea (Meyer, pp. 101-04; Schnitzler, pp. 63-71). Having first sent a naval reconnaissance mission to explore shores of the Black Sea (cf. Fol and Hammond, pp. 239-40), in about 513 Darius crossed the



Peoples of the Persian empire, as recorded on the relief on the tomb of Darius I at Naqsh-e Rostam (numbered in the order in which the peoples are represented on the relief and named in the accompanying text). (Click to enlarge)

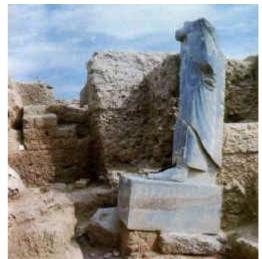
Bosporus into Europe (Shahbazi, 1982, pp. 232-35), marching over a pontoon bridge built by his Samian engineer, Mandrocles. He continued north along the Black Sea coast to the mouth of the

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Danube, above which his fleet, led by lonians, had bridged the river; from there he crossed into Scythia (Herodotus, 4.87-88, 4.97). The Scythians evaded the Persians, wasting the countryside as they retreated eastward. After following them for a month Darius reached a desert and began to build eight frontier fortresses; owing to Scythian harassment of his troops and the October weather, which threatened to hinder further campaigning, he left them unfinished and returned via the Danube bridge. He had, however, "advanced far enough into Scythian territory to terrify the Scythians and to force them to respect the Persian forces" (Herodotus, 4.102-55; cf. Meyer, pp. 105-07; Macan, pp. 2-45; Prašek, II, pp. 91-108; Rostovtzeff, pp. 84-85; Junge, 1944, pp. 104-05, 187-88; Schnitzler, pp. 63-71; Fol and Hammond, pp. 235-43; Ùernenko, with further references). Shortly afterward Megabyzus reduced gold-rich Thrace and several Greek cities of the northern Aegean; Macedonia submitted voluntarily (Herodotus, 4.143, 5.1-30), and Aryandes (q.v.), satrap of Egypt, annexed Cyrene (Libya; 4.167, 4.197-205). Four new "satrapies" were thus added to Darius' empire: *Sakâ tyaiy paradraya* "Overseas Scythians," Skudra (Thrace and Macedonia), *Yaunâ takabarâ* or *Yaunâ tyaiy paradraya* (Thessalians and Greek islanders), and Putâyâ (Libya).

By 510 B.C.E. the Asiatic Greeks and many islanders had accepted Persian rule and were being governed by tyrants responsible to Darius. There were also pro-Persian parties, the "Medizing Greeks," in Greece itself, especially at Athens (Herodotus, 6.115, 6.124; Gillis, pp. 39-58; on the term "Medism," see Graf). Darius encouraged these tendencies and opened his court and treasuries to those Greeks who wanted to serve him-as soldiers, artisans, mariners, and statesmen (Junge, 1944, pp. 98 ff.). Greek fear of growing Persian might and Persian annoyance at Greek interference in Ionia and Lydia made conflict between them inevitable, however (Meyer, pp. 277-80; Hignett, pp. 83-85). When, in 500 B.C.E., deposed oligarchs of Naxos in the Cyclades appealed to Artaphernes (see ARTAPHRENEÚS), Darius' brother and satrap of Lydia, he sent a fleet to Naxos; partly owing to a falling out with Aristagoras (q.v.), tyrant of Miletus, the expedition failed, however. Aristagoras then organized the "Ionian revolt." Eretrians and Athenians supported him by sending ships to lonia and burning Sardis. Military and naval operations continued for six years, ending with the Persian reoccupation of all Ionian and Greek islands. The prudent statesman Artaphernes then reorganized Ionia politically and financially. As anti-Persian parties gained ascendance in Athens, however, and aristocrats favorable to Persia were exiled from there and from Sparta, Darius retaliated by sending a force, led by his son-in-law Mardonius, across the Hellespont. Owing to a violent storm and harassment by Thracians he was defeated. Darius then sent a second expedition (of about 20,000 men; Hignett, p. 59) under Datis (q.v.) the Mede, who captured Eretria and, guided by Hippias, exiled tyrant of Athens, landed at Marathon in Attica. In the late summer of 490 the Persians were defeated by a heavily armed Athenian infantry (9,000 men, supported by 600 Plataeans and some 10,000 lightly armed "attendants") under Miltiades (Meyer, pp. 277-305; Hignett, pp. 55-74).

Meanwhile, Darius was occupied with his building programs in Persepolis, Susa, Egypt, and elsewhere (Hinz, 1976, pp. 177-82, 206-18, 235-42). He had linked the Nile to the Red Sea by means of a canal running from modern Zagâzîg in the eastern Delta through Wâdî Tûmelât and the lakes Bohayrat al-Temsâh and Buhayrat al-Morra near modern Suez (Hinz, 1975b; Tuplin, 1991). In 497 he again traveled to Egypt, "opened" his "Suez canal" amid great fanfare, executed Aryandes for treason, erected several commemorative monuments, and returned to Persia, where he found that the codification of Egyptian law had been completed (Bresciani, p. 508); a statue of Darius in Egyptian style, found at Susa (*Elr.* II, p. 575 fig. 40), reflects the influence of this journey. Following Datis' defeat at Marathon Darius resolved to lead a punitive expedition in person, but another revolt in Egypt (possibly led by the Persian satrap; Bresciani, p. 509) and failing health prevented



Statue of Darius the Great in Egyptian Style - Picture Courtesy of Iran Archaeology Research Centre - 1972 (Click to enlarge)

him. He died in October 486 and was entombed in the rock-cut sepulcher he had prepared at Naqš-e Rostam (see Schmidt, III, pp. 80-90, pls. 18-39). He had already designated as his successor Xerxes, his eldest son by Queen Atossa (XPf, 27-31; Kent, *Old Persian*, p. 150; Ritter, pp. 20-23, 29-30); the throne thus returned to Cyrus' line.

#### Darius' empire.

Cyrus and Cambyses had incorporated Elam, Media, Lydia, Babylonia, Egypt, and several eastern Iranian states into a loose federation of autonomous satrapies, subject to irregular taxation (Herodotus, 3.89; 3:120-29; 4.165-67, 200-05; cf. DB 3.14, 3.56; Meyer, pp. 46-47; Lehmann-Haupt, cols. 85-90; Ehte, cham, pp. 110-27; Petit, pp. 16-97). They had relied heavily on non-Persian officials and the established institutions of the subject states (Dandamaev, 1975; idem, 1992, pp. 3 ff.; Bivar, *Camb. Hist. Iran*, pp. 610-21), which encouraged particularism among Iranian magnates and nationalism among conquered nations. These tendencies resulted in chaos and rebellion and led to the destruction of the Achaemenid federation in 522 B.C.E. (Schaeder, 1941, p. 32; Junge, 1944, pp. 41-43, 51; Stolper, 1985, p. 6). Darius thus faced the task of reconquering the satrapies and integrating them into a strong empire. The accomplishment of his first year was "the actual creation, for the first time, of a real empire: a governmental structure based on the army, on certain classes of the society whose loyalty was to the throne and not to some



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specific geographical region, and on the charisma, intelligence and moral fortitude of one man, Darius" (Young, p. 63). Darius knew that an empire could flourish only when it possessed sound military, economic, and legal systems, as is clear from his prayer "May Ahuram azda protect this country from a [hostile] army, from famine, from the Lie" (DPd 15-17; Kent, *Old Persian*, p. 135; cf. Tuplin, pp. 144-45). Once he gained power, Darius placed the empire on foundations that lasted for nearly two centuries and influenced the organization of subsequent states, including the Seleucid and Roman empires (Stolper, 1989, pp. 81-91; Kornemann, pp. 398 ff., 424 ff.; Junge, 1944, pp. 150, 198 n. 46). Himself a soldier of the first rank "both afoot and on horseback" (DNb 31-45; Kent, *Old Persian*, p. 140), Darius provided the empire with a truly professional army. Earlier Achaemenids had relied on regional contingents, especially cavalry, apparently recruited as the need arose. Darius put his trust mainly in Iranians, including Medes, Scythians, Bactrians, and other kindred peoples (see ARMY i.3) but above all Persians: "If you thus shall think, 'May I not feel fear of (any) other,' protect this Persian people" (DPe 18-22; Kent, *Old Persian*, p. 136). Thenceforth the mainstay of the imperial army was an infantry force of 10,000 carefully chosen Persian soldiers, the Immortals, who defended the empire to its very last day (Curtius Rufus, 3.3.13).

Darius ruled about 50 million people in the largest empire the world had seen (Meyer, p. 85). His subjects (*kâra*) or their lands (*dahyu*) were several times listed, and also depicted, in varying order at Bîsotûn and Persepolis (Junge, 1944, pp. 132-59; Kent, 1943; Ehte,cham, pp. 131-63; Walser; Hinz, 1969, pp. 95-113; Calmeyer), but the definitive account is carved on his tomb (*Elr.* V, p. 722 fig. 46). In the relief on his tomb Darius and his royal fire are depicted upon the imperial "throne" supported by thirty figures of equal status, who symbolize the nations of the empire, as explained in the accompanying inscription (DNa 38-42). The text reflects Darius' status, ideals, and achievements. He introduces himself as "Great King, King of Kings, King of countries containing all

kinds of men, King in this great earth far and wide, son of Hystaspes, an Achaemenian, a Persian, son of a Persian, an Aryan [=Iranian], having Aryan lineage" (DNa 8-15; Kent, *Old Persian*, p. 138). Next "the countries other than Persis" are enumerated in what is clearly intended to be a geographical order. According to Herodotus (3.89), Darius "joined together in one province the nations that were neighbors, but sometimes he passed over the nearer tribes and gave their places to more remote ones." Applying this scheme to the lands recorded in the record relief, it is possible to distinguish, beside Persis, six groups of nations, recalling the traditional Iranian division of the world into seven regions (Shahbazi, 1983, pp. 243-46 and fig. 3; cf. Plato, Leges, 3,695c, where it is reported that power was divided among seven leading Persians). The sevenfold division of Darius' empire, revealing his geographical conception, is as follows: (1) the central region, Persis (Parsa). which paid no tribute, though some of its districts sent commodities (Herodotus, 3.97; Koch; cf. Briant, pp. 342-501), possibly to pay for garrisons; (2) the western region encompassing Media (Mâda) and Elam (Ûja); (3) the Iranian plateau encompassing Parthia (Parθava), Aria (Haraiva), Bactria (Bâxtri), Sogdiana (Sugda), Chorasmia (Uvârazmiya), and Drangiana (Zrankâ; cf. Herodotus, 3.93, according to whom these lands paid little tribute); the borderlands: Arachosia (Harauvati), Sattagydia (ÿatagu), Gandara (Gandâra), Sind (Hindu), and eastern Scythia (Sakâ); (5) the western lowlands: Babylonia (Bâbiru), Assyria (Aθurâ), Arabia (Arabâya), and Egypt (Mudrâya); (6) the northwestern region encompassing Armenia (Armina), Cappadocia (Katpatuka), Lydia (Sparda), Overseas Scythians (Sakâ tyaiy paradraya), Skudra, and Petasos-Wearing Greeks (Yaunâ takabarâ); and (7) the southern coastal regions: Libya (Putâyâ), Ethiopia (Kûša), Maka (Maciya), and Caria (Karka, i.e., the Carian colony on the Persian Gulf; Schaeder, 1932, p. 270; Shahbazi, 1983, p. 245 n. 28; Figure 2).

Early in his reign Darius established twenty *archi* (provinces), called "satrapies," assigning to each an *archon* (satrap) and fixing tribute to be paid by neighboring "nations," joined together in each satrapy (Herodotus, 3.89). The list is preserved in the confused but invaluable catalogue of Herodotus (3.90-97; for detailed analysis, see Junge, 1941; Leuze, pp. 25-144; Lehmann-Haupt, cols. 91-109; Ehte,cham, pp. 96-102, 127-63; for Babylonian data, see also Dan-damayev, 1992, pp. 8-12 and passim). It begins with Ionia and lists the rest in a sequence from west to east, with the exception of "the land of the Persians," which did not pay tax. The nations in each satrapy are enumerated. The fixed annual tributes to Darius' treasury were paid according to the Babylonian talent in silver but to the Euboic talent (25.86 kg) in gold (3.89). The total yearly tribute, according to Herodotus' somewhat contradictory calculations, seems to have been less than 15,000 silver talents (3.95).

Most of the satraps were Persian, members of the royal house or of the six great noble families (Meyer, pp. 47 ff.; Schaeder, 1941, p. 18; cf. Petit, pp. 219-26). They were appointed directly by Darius to administer these tax districts, each of which could be divided into subsatrapies and smaller units with their own governors, usually nominated by the central court but occasionally by the satrap (see ACHAEMENID DYNASTY ii). To ensure fair assessments of tribute, Darius sent a commission of trusted men (cf. OPers. \*hamara-kâra-; Stolper, 1989, p. 86; Dandamayev, 1992, p. 36) to evaluate the revenues and expenditures of each district (cf. Plutarch, Moralia 172F; Polyaenus, Stratagemata 7.11.3). Similarly, after the Ionian revolt his brother Artaphernes calculated the areas of Ionian cities in parasangs and fixed their tributes (OPers. bâji-) at a rate "very nearly the same as that which had been paid before the revolt," a rate that continued unaltered down to Herodotus' time (Herodotus, 6.42). Contemporary Babylonian documents attest the existence of a detailed land register in which property boundaries, ownership (of cattle and probably other movable goods, as well as of urban and rural real estate), and assessments were recorded (Stolper, 1977, pp. 259-60; Dandamayev, 1992, pp. 11-12). In the Persepolis Elamite texts officials who "write people down" and "make inquiries" are mentioned (see Tuplin, p. 145, with references). To prevent concentration of power in one person, each satrap was normally accompanied by a "secretary," who observed affairs of the state and communicated with the king; a treasurer, who safeguarded provincial revenues; and a garrison commander, who was also responsible to the king. Further checks were provided by royal inspectors with full authority over all satrapal affairs, the so-called "eyes" and "ears" of the king (Meyer, pp. 39-89; Kiessling; Schaeder, 1934; Ehtecham, pp. 56-62; Frye, 1984, pp. 106-26; see also Hirsch, pp. 101-43; Tuplin; Petit, pp. 109-72).

Coordination of the imperial administration was the responsibility of the chancery, with headquarters at Persepolis. Susa. and Babylon (Junge. 1944, pp. 78 ff.; Hinz, 1971; idem, 1976, pp. 226-31;

### .Old Persian (Aryan) - (The Circle of Ancient Iranian Studies - CAIS)©

idem, 1979), although such chief cities of the empire as Bactria, Ecbatana (q.v.), Sardis, Dascylium (q.v.), and Memphis also had branches (Ehtecham, pp. 58-62; Tuplin, with full references). Bureaucratic organization was deeply rooted in the Near East (Schaeder, 1941, p. 17), but Darius reformed it in accordance with the needs of a centralized empire. Aramaic was retained as the common language, especially in trade, and "imperial Aramaic" soon spread from India to Ionia, leaving permanent traces of Achaemenid organization (see ART IN IRAN iii, pp. 571-72). Elamite and Babylonian, written in cuneiform, were used in western Asia, and Egyptian, written in hieroglyphics, prevailed in Egypt. Early in his reign, however, Darius appears to have commissioned a group of scholars to create a writing system specifically for Persian (Junge, 1944, p. 63; Hinz, 1973, pp. 15-27; Mayrhofer, pp. 175, 179); the result was the creation of what Darius called "Aryan" script (Old Persian cuneiform, q.v.; cf. DB 4.88-89; Schmitt, p. 73 and n. 89), the simplest cuneiform system, which bears clear traces of having been modeled on the Urartian signs (Mayrhofer, p. 179). Although this script was merely "ceremonial," used for official inscriptions only, it nevertheless contributed to the distinctive identity of the Persian empire.

In keeping with his "very clear creative role" in the patronage of "an Achaemenid canon for imperial art, edicts and administrative mechanisms" (Root, p. 8), Darius introduced (before 500 B.C.E.; Root, pp. 1-12) a new monetary system based on silver coins (Gk. *siglos*) with an average weight of 8 g and gold coins weighing 5.40 g, equaling in value 20 silver coints). The gold coin, *\*dârayaka-*, Gk. *dareiko,s*, was probably named after Darius (see DARIC), as ancient sources attest (cf. Meyer, p. 75 n. 2; Schwyzer, pp. 8-19; Kent, *Old Persian*, p. 189 [cf. W. B. Henning apud Robinson, p. 189 n. 1]; Brandenstein and Mayrhofer, p. 115; Hinz, 1975a, p. 83; Cook, p. 70; Bivar, *Camb. Hist. Iran*, p. 621; for a different derivation).

In order to enhance trade, Darius built canals, underground waterways, and a powerful navy (Hinz, 1976, pp. 206 ff.). He further improved the network of roads and way stations throughout the empire, so that "there was a system of travel authorization by King, satrap, or other high official, which entitled the traveller to draw provisions at daily stopping places" (Tuplin, p. 110; cf. Hallock, 1978, p. 114; Lewis, 1977, pp. 4-5; Bivar, *CAH2*, pp. 204-08). Some standardization of weights and measures was also effected (see Bivar, *Camb. Hist. Iran*, pp. 621-37). Darius appointed loyal subjects, primarily Persians, to senior posts but was eager to listen to and follow the advice of non-Persian counselors as well (Cook, pp. 71-72). He recognized the kinship between the Greeks and Persians and promoted an "open door" policy under which Hellenic aristocrats could enter his service and receive honored positions (Junge, 1944, pp. 95-120, 185-91).

Darius sponsored large construction projects in Susa, Babylon, Egypt, and Persepolis (Hinz, 1976, pp. 235-42). The monuments were often inscribed in the scripts and languages of the empire: Old Persian, Elamite, Babylonian, and Egyptian hieroglyphs. Large numbers of workers and artisans of diverse nationalities, some of them deportees (Dandamaev, 1975; Koch) were employed on these projects, enhancing both the Persian economy and intercultural relations. The king was also deeply interested in agriculture. In his letter to Gadates, a governor in Asia Minor, he echoed the Avestan statement (Vd. 3.4, 23) "the Earth feels most happy... where one of the faithful cultivates corn, grass and fruits" (Lochner-Hüttenbach, in Brandenstein and Mayrhofer, pp. 91-92). Darius' codification of Egyptian law has been mentioned above; he also sanctioned various other local codes (Schaeder, 1941, pp. 25-26; Tuplin, pp. 112-13). Little need be said about Darius' religion. It is clear that he felt himself chosen by Ahura Mazda: "Ahuramazda, when he saw this earth in commotion, thereafter bestowed it upon me, made me king. I am king, by the favor of Ahuramazda I put it down in its place" (DNa 30 ff.; Kent, Old Persian, p. 138); "Ahuramazda is mine; I am Ahuramazda's" (DSk 3-5; Kent, Old Persian, p. 145). These sentiments echo Zoroaster's utterances and attest Darius' piety (Hinz, 1976, pp. 242-45). With characteristic Achaemenid tolerance (Schaeder, 1941, pp. 22, 34), however, Darius supported alien faiths and temples "as long as those who held them were submissive and peaceable" (Boyce, Zoroastrianism II, p. 127). He funded the restoration of the Jewish temple originally decreed by Cyrus (Ezra 5:1-6:15), showed favor toward Greek cults (attested in his letter to Gadatas), observed Egyptian religious rites related to kingship (Posener, pp. 24-34, 50-63), and supported Elamite priests (Boyce, Zoroastrianism II, pp. 132-35). In H. H. Schaeder's opinion (1941, p. 29), "the great politics of the King reveal his clear understanding of what were possible and what necessary . . .; [and] the organizations which he established in the empire earn him the title of the greatest statesman of ancient East."

## Bibliography

- J. M. Balcer, *Herodotus and Bisitun. Problems in Ancient Persian Historiography*, Stuttgart, 1987. E. Benveniste, *Les Mages dan l'ancien Iran*, Paris, 1938.
- E. J. Bickerman and H. Tadmor, "Darius I, Pseudo-Bardiya and the Magi," *Athenaeum*, N.S. 56, 1978, pp. 239-61.
- A. D. H. Bivar, "Achaemenid Coins, Weights and Measures," *Camb. Hist. Iran* II, pp. 610-39.
- Idem, "The Indus Lands," CAH2 IV, pp. 194-210.
- R. Borger, Die Chronologie des Darius-Denkmals am Behistun-Felsen, Göttingen, 1982.
- W. Brandenstein and M. Mayrhofer, Handbuch des Altpersischen, Wiesbaden, 1964.
- E. Bresciani, "The Persian Occupation of Egypt," Camb. Hist. Iran II, pp. 502-28.
- P. Briant, *Rois, tributs et paysans. E'tudes sur les formations tributaires du Moyen-Orient ancien*, Paris, 1982.
- A. R. Burn, *Persia and the Greeks. The Defense of the West, c. 546-478 B.C.*, London, 1962.
- P. Calmeyer, "Zur Genese altiranischer Motive VIII. Die 'Statistische Landcharte des Perserreiches," *AMI*, N.F. 15, 1982, pp. 105-87; 16, 1983, pp. 141-232.
- G. G. Cameron, "The Persian Satrapies and Related Matters," *JA* 32, 1973, pp. 47-56. G. Cardascia, *Les archives des Murašû*, Paris, 1991.
- E. V. Ùernenko, Skifo-persidskaya vo¥na (The Scytho-Persian war), Kiev, 1984.
- J. M. Cook, *The Persian Empire*, London, 1983. M. A. Dandamaev (Dandamayev), *Iran pri pervykh Akhemenidakh*, Moscow, 1963; rev. ed. tr. H. D. Pohl as *Persien unter den ersten Achämeniden (6. Jahrhundert v. Chr.)*, Wiesbaden, 1976.
- Idem, "Forced Labour in the Persian Empire," AoF 2, 1975, pp. 71-78.
- Idem, A Political History of the Achamaenid Empire, tr. W. J. Vogelsang, Leiden, 1989.
- Idem, Iranians in Achaemenid Babylonia, Costa Mesa, Calif., 1992.
- J. J. A. van Dijk and W. R. Mayer, *Texte aus dem Rêš-Heiligtum in Uruk-Warka*, Baghdader Mitteilungen, Beiheft 2, 1980.
- R. Drews, The Greek Accounts of Eastern History, Cambridge, Mass., 1973.
- M. Ehte, cham, L'Iran sous les Ache, me, nides, Fribourg, 1946.
- A. Fol and N. G. L. Hammond, "Persia in Europe, Apart from Greece," CAH2 IV, pp. 234-53.

- R. N. Frye, *The History of Ancient Iran*, Munich, 1984.
- I. Gershevitch, "The False-Bardiya," AAASH 27/4, 1979, pp. 337-51.
- D. Gillis, *Collaboration with the Persians*, Wiesbaden, 1979.
- D. F. Graf, "Medism. The Origin and Significance of the Term," *Journal of Hellenic Studies* 104, 1984, pp. 15-30.
- J. C. Greenfield and B. Porten, eds., *The Bisitun Inscription of Darius the Great. Aramaic Version*, Corpus Inscr. Iran., pt. 1, vol. 5, Texts 1, 1982.
- F. Gschnitzer, Die sieben Perser und das Königtum des Dareios, Heidelberg, 1977.
- Idem, "Zur Stellung des persischen Stammlandes im Achaimenidenreich," in Ad Bene et Fideliter Seminandum. Festgabe f
  ür Karlheinz Deller, Kevelaer and Neukirchen-Vluyn, Germany, 1988, pp. 87-122.
- E. Haerinck, "Le palais ache, me, nide de Babylone," Iranica Antiqua 10, 1973, pp. 108-32.
- R. T. Hallock, "The 'One Year' of Darius I," JNES 19, 1960, pp. 36-39.
- Idem, Persepolis Fortification Tablets, Chicago, 1969.
- Idem, "The Use of Seals on the Persepolis Fortification Tablets," in M. Gibson and
- R. D. Biggs, eds., Seals and Sealing in the Ancient Near East, Malibu, Calif., 1978, pp. 127-33.
- Idem, "The Evidence of the Persepolis Tablets," *Camb. Hist. Iran* II, pp. 588-609. J.
   Harmatta, "A Recently Discovered Old Persian Inscription," *AAASH* 2, 1954, pp. 1-14.
- C. Hignett, Xerxes' Invasion of Greece, Oxford, 1963.
- W. Hinz, "Zur Behistun-Inschrift des Dareios," ZDMG 96, 1942, pp. 326-49.
- Idem, Altiranische Funde und Forschungen, Berlin, 1969, 63-114.
- Idem, "Achaemenidische Hofverwaltung," ZA 61, 1971, pp. 260-311.
- Idem, Neue Wege im Altpersischen, Wiesbaden, 1973.
- Idem, Altiranisches Sprachgut der Nebenüberlieferungen, Wiesbaden, 1975a.
- Idem, "Darius und der Suezkanal," AMI, N.F. 8, 1975b, pp. 115-21. Idem, Darius und die Perser. Eine Kulturgeschichte der Achämeniden, 2 vols., Baden-Baden, 1976-79.
- S. W. Hirsch, The Friendship of the Barbarians, Hanover, N.H., 1985.
- W. W. How and J. Wells, A Commentary on Herodotus, 2 vols., Oxford, 1961.
- P. J. Junge, "Satrapie und Nation," *Klio* 34, 1941, pp. 1-55. Idem, *Dareios I. König der Perser*, Leipzig, 1944.

- R. G. Kent, "Old Persian Texts. The Lists of Provinces," JNES 2, 1943, pp. 302-06.
- M. Kiessling, *Zur Geschichte der ersten Regierungsjahre des Darius Hystaspes*, Leipzig, 1900.
- H. Koch, Persien zur Zeit des Dareios. Das Achämenidenreich im Lichte neuer Quellen. Kleine Schriften aus dem vorgeschichtlichen Seminar der Philipps-Universität Marburg 25, Marburg, 1988.
- E. Kornemann, *Römische Geschichte* II, Leipzig, 1940.
- C. F. Lehmann-Haupt, "Satrap," in Pauly-Wissowa IIA/1, cols. 82-188.
- O. Leuze, *Die Satrapieneinteilung in Syrien und im Zweistromlande von 520 bis 320*, 2 vols., Halle, 1935; repr. in 1 vol., Hildesheim, 1972.
- D. M. Lewis, Sparta and Persia, Leiden, 1977.
- Idem, "The Persepolis Fortification Texts," in H. Sancisi-Weerdenburg and A. Kuhrt, eds., Achaemenid History IV, Leiden, 1990, pp. 1-6.
- A. B. Lloyd, "The Inscription of Udjahorresnet. A Collaborator's Testament," *Journal of Egyptian Archaeology* 68, 1982, pp. 166-80.
- R. W. Macan, Herodotus. The Fourth, Fifth and Sixth Books II, London, 1895.
- J. Marquart, Untersuchungen zur Geschichte von Eran II, Leipzig, 1905, pp. 158-62.
- M. Mayrhofer, "Über die Verschriftung des Altpersischen," *Historische Sprachforschung* 102, 1989, pp. 174-84.
- E. Meyer, *Geschichte des Altertums* IV, Basel, 1954.
- H. S. Nyberg, "Das Reich der Achämeniden," in F. Valjavec, ed., *Historia Mundi* III, Munich, 1954, pp. 56-115.
- A. T. Olmstead, "Darius and His Behistun Inscription," AJSLL 55, 1938, pp. 392-416.
- Idem, The Persian Empire, Chicago, 1948, pp. 107-18.
- A. L. Oppenheim, "The Babylonian Evidence of Achaemenid Rule in Mesopotamia," *Camb. Hist. Iran* II, pp. 529-87.
- T. Petit, *Satrapes et satrapies dans l'empire ache,me,nide de Cyrus le Grand aà Xerxes ler*, Lieàge, 1990.
- A. Poebel, "Chronology of Darius' First Year of Reign," *AJSLL* 55, 1938, pp. 142-65, 285-314. Idem, "The Duration of the Reign of Smerdis, the Magian, and the Reigns of Nebuchadnezzar III and Nebu-chadnezzar IV," *AJSLL* 56, 1939, pp. 121-45.
- G. Posener, La premieàre domination perse en E´gypte, Cairo, 1936.
- J. V. Pra,šek, Geschichte der Meder und Perser bis zur makedonischen Eroberung, 2 vols., Gotha, 1906-10; repr. Darmstadt, 1968; rev. P. R. Rost, OLZ 1, 1898, pp. 38-45.

- J. D. Ray, "Egypt 525-405 B.C.," *CAH*2 IV, pp. 254-86.
- H. W. Ritter, Diadem und Königsherrschaft. Untersuchungen zu Zeremonien und Rechtsgrundlagen des Herr-schaftsantritts bei den Persern, bei Alexander dem Grossen und im Hellenismus, Wiesbaden, 1965.
- E. S. G. Robinson, "The Beginnings of Achaemenid Coinage," NC, 1958, pp. 187-93.
- M. C. Root, "Evidence from Persepolis for Dating of Persian and Archaic Greek Coinage," NC, 1988, pp. 1-12.
- P. R. Rost, "Untersuchungen zur altorientalischen Geschichte," *Mitteilungen der Vorderasiatisch-Aegyptischen Gesellschaft* 41/1, Leipzig, 1897, pp. 107-10, 208-10.
- M. Rostovtzeff, Iranians and Greeks in South Russia, 2nd ed., New York, 1969.
- H. H. Schaeder, "Die Ionier in der Bauinschrift des Dareios von Susa," *Jahrbuch des Deutschen Archäologischen Instituts*, 1932, pp. 270-74.
- Idem, "Iranica. I. Das Auge des Königs," in Abh. der Gesellschaft der Wissenschaften zu Göttingen, Phil.-hist. Kl., 3rd series 10, 1934, pp. 3-24.
- Idem, Das persische Weltreich, Breslau, 1941.
- E. F. Schmidt, *Persepolis* I-III, Chicago, 1953-70.
- R. Schmitt, *The Bisitun Inscriptions of Darius the Great. Old Persian Text.* Corpus Inscr. Iran, pt. 1, vol. I, Texts 1, 1991.
- H. J. Schnitzler, "Der Sakenfeldzug Dareios' des Grossen," in R. Stiehl and G. A. Lehmann, eds., *Antike und Universalgeschichte. Festschrift für Erich Stier*, Münster, 1972, pp. 52-71.
- E. Schwyzer, "Awest. aspərənô und byzantin. a,spron. Beiträge zur griechisch-orientalischen Münznam enforschung," IF 49, 1931, pp. 11-45.
- U. Seidl, "Ein Relief Dareios' I in Babylon," AMI, N.F. 3, 1976, pp. 125-30.
- A. Sh. Shahbazi, Jahân-dârî-e Dâryûš-e Bozorg, Tehran, 1350 Š./1971.
- Idem, "Darius in Scythia and Scythians in Persepolis," AMI, N.F. 15, 1982, pp. 189-235.
- Idem, "Darius' 'Haft Kišvar'," AMI, Suppl. 10, Berlin, 1983, pp. 239-46.
- M. Stolper, "Three Iranian Loan-words in Late Babylonian Texts," in L. Levine, ed., Mountains and Lowlands, Malibu, Calif., 1977, pp. 251-66.
- Idem, Entrepreneurs and Empire, Leiden, 1985.
- Idem, "On Interpreting Tributary Relationships in Achaemenid Babylonia," in P. Briant and C. Herrenschmidt, eds., *Le tribut dans l'empire perse. Actes de la table ronde de Paris, 12-13 de,cembre 1986*, Paris, 1989, pp. 147-56.
- J. N. Strassmaier, Inschriften von Darius, Leipzig, 1892.

- C. Tuplin, "The Administration of the Achaemenid Empire," in I. Carradice, ed., *Coinage and Administration in the Athenian and Persian Empires. The Ninth Oxford Symposium on Coinage and Monetary History*, Oxford, 1987, pp. 109-64.
- Idem, ""Darius' Suez Canal and Persian Imperialism," in H. Sancisi-Weerdenburg and A. Kuhrt, eds., *Achaemenid History* VI. *Asia Minor and Egypt. Old Cultures in a New Empire*, Leiden, 1991, pp. 237-83.
- M. Vasmer, *Die Iranier in Südrussland*, Leipzig, 1923.
- E. N. von Voigtlander, *The Bisitun Inscription of Darius the Great. Babylonian Version*, Corpus Inscr. Iran, pt. 1, vol. II, Texts 1, 1978.
- G. Walser, Die Völkerschaften auf den Reliefs von Persepolis, Berlin, 1966.
- G. Widengren, "The Sacral Kingship of Iran," in *Studies in the History of Religions*, Numen, Suppl., Leiden, 1959, pp. 242-57.
- Idem, "Über einige Problem ein der altpersischen Geschichte," in J. Meixner and G. Kegel, eds., *Festschrift für L. Brandt zum 60 Geburtstag*, Opladen, Germany, 1968, pp. 517-33.
- J. Wiesehöfer, Der Aufstand Gaumâta's und die Anfänge Dareios' I, Bonn, 1978.
- H. Winckler, Untersuchungen zur altorientalischen Geschichte, Leipzig, 1889.
- T. Cuyler Young, Jr., "The Persian Empire," CAH2 IV, pp. 1-111.

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