that same day one of his popular operettas was given at a Lisbon theatre.

His dramatic works, which were produced at the Bairro Alto theatre between 1733 and 1738, include the following comedies, all played by marionettes:—*D. Quixote* (1733), *Esopaida* (1734), *Os Encantos de Medea* (1735), *Amphitrião* (May 1736), *Labyrintho de Creta* (November 1736), *Guerras do Alecrim e Mangerona* (carnival of 1737), As *Variedades de Proteo* (May 1737) and *Precipicio de Faetonte* (1738). Slight as these sketches are, they show considerable dramatic talent and an Aristophanic wit. The characters are well drawn and the dialogue full of comic strength, the scenes knit together and the plot skilfully worked out. Moreover Silva possessed a knowledge of stagecraft, and, if he had lived, he might have emanci­pated the drama in Portugal from its dependence on foreign writers; but the triple licence of the Palace, the Ordinary and the Inquisition, which a play required, crippled spontaneity and freedom. Even so, he showed some boldness in exposing types of the prevailing charla­tanism and follies, though his liberty of speech is far less than that of Gil Vicente (*q.v.*). His comedies give a truthful and interesting picture of 18th century society, especially his best comedy, the *Alecrim e Mangerona,* in which he treats of the *fidalgo pobre,* a type fixed by Gil Vicente and Francisco Manoel de Mello (*q.v.*). His works bear the title “ operas" because, though written mainly in prose, they contain songs which Silva introduced in imitation of the true operas which then held the fancy of the public. He was also a lyric poet of real merit, combining correctness of form with a pretty inspiration and real feeling. His plays were published in the first two volumes of a collection entitled *Theatro comico portuguez,* which went through at least five editions in the 18th century, while the *Alecrim e Mangerona* appeared separately in some seven editions. This comedy and the *D. Quixote* have been reprinted in a critical edition with a life of Silva by Dr Mendes dos Remedios (Coimbra, 1905). Ferdinand Denis, in his *Chefs-d'œuvre du théâtre portugais* (pp. 365-496, Paris, 1823), prints liberal extracts, with a French translation, from the *Vida de D. Quixote*, and F. Wolf likewise gives selections from Silva’s various compositions. Silva is the subject also of several laudatory poems and dramas, one or two of which were composed by Brazilian compatriots.

See Dr Theophilo Braga, *Historia do theatro portuguez; a baixa comedia e a opera* (Oporto, 1871); F. Wolf, *Dorn Antonio José da Silva* (Vienna, i860); Ernest David, *Les Opéras du juif Antonio José da Silva, 1705-1739* (Paris, 1880); Oliveira Lima, *Aspectos de litteratura colonial Brazileira* (Leipzig, 1896); *Jewish Encyclopedia,* vol. xi. p. 341; G. A. Kohnt, "Bibliography of Works relating to Antonio José da Silva and Bibliography of Don Antonio’s Compositions” in the *Publ. Am. Jew. Hist. Soc.* No. 4, p. 181; idem, “ Martyrs of the Inquisition in South America,” ib. p. 135; Μ. Grünwald, “José da Silva” in *Monatsschrift* (1880), xxix. p. 241. (E. Pr.)

**SILVANUS** (Lat. *silva*, wood), a deity or spirit of Italian woodland; not, however, of the wholly wild woodland, but of that which borders the clearings in a country not entirely re­claimed. Thus he is partly wild and partly civilized, and reflects the experience of the earliest settlers in Italy, whose descendants took him with them to the farthest limits of the empire, even to Britain, where we have many votive inscriptions to him, always as the friendly deity dwelling outside the new clearing, benevolent towards the settler in a strange land. This leading characteristic of Silvanus is shown clearly in Roman literature: Horace writes of the “ horridi dumeta Silvani ” *(Odes,* iii. 29) but he also calls him “ tutor finium" *(Epod.* ii. 22) while for Virgil he is “ arvorum pecorisque deus" *(Aen.* viii. 600). A writer on land measure­ment *(Script. gromatici,* i. 302) tells us that each holding had three Silvani—*domesticus* (of the holding itself), *agrestis* (of the wilder pasture-land) and *orientalis* (of the boundaries). It is plain that in him the Italians had a very useful deity, and in all these capacities he became extremely popular, as the extraordinary number of his inscriptions shows. Unlike Mars, from whom he was probably in origin an offshoot (cf. the Mars Silvanus of Cato, *De re rustica,* 141; see Mars), he never made his way into the towns, but is almost the only Roman deity who from first to last retained the same perfectly intelligible rustic character. His double nature as deity of woodland and cultivated land is seen well in the artistic representations of him; he carries a young tree in one hand, a pruning-hook in the other.

See Wissowa, *Gesammelte Abhandlungen* (1904, p. 78 foil.).

(W. W. F.\*)

**SILVER** (symbol Ag, from the Latin *argentum,* atomic weight 107∙88 (O = 16)), a metallic chemical element, known from the earliest times and of great importance as a "noble ” metal for articles of value—coinage, ornamentation and jewelry. Etymologically the word “ silver ” probably refers to the shining appearance or brightness of the metal. The Latin *argentum* is cognate with the Greek αργυρos, silver, which in turn is derived from άργό$, shining. The Hebrew *Keseph* is connected with a root meaning “to be pale.” The alchemists named it Luna or Diana, and denoted it by the crescent moon; the first name has survived in *lunar caustic,* silver nitrate. Silver is widely diffused throughout nature, occurring in minute amount in sea-water, and in the mineral kingdom as the free metal, as an amalgam with mercury and as alloys with gold, platinum, copper and other metals. Native silver is occasionally met with in metalliferous veins, where it has been formed by the alteration of silver-bearing minerals. It crystallizes in the cubic system, but the crystals are usually distorted and indistinctly developed: twisted wire-like forms are much more common. The best crystallized specimens have been obtained from Kongsberg in Norway, large masses, weighing as much as 5 cwts., having been found. It is also found in other silver mines, especially those of Mexico, Peru and Chile; in the Lake Superior copper mining region it occurs in association with native copper. The element is a constituent of many mineral sulphides, some of which are of sufficiently frequent occurrence to rank as ores of silver. Of these the more important are noticed under *Metallurgy;* here we may notice the rarer minerals. Silver sulphide, Ag2S, occurs naturally as the orthorhombic acanthite, and the cubic argentite; the telluride, Ag2Te, named hessite, assumes cubic forms; other tellurides containing silver are petzite, (Ag,Au)2Te, and sylvanite, AuAgTe4. In association with antimonious and arsenious sulphides, silver sulphide forms many important minerals, which sometimes present dimorphous forms, reflecting the dimorphism of silver sulphide; moreover, the corresponding arsenious and antimonious compounds are frequently isomorphous. This is illustrated by the hexagonal pyrargyrite 3Ag2S∙Sb2S3, and proustite, 3Ag2S∙As2S3, and the monoclinic pyrostilpnite, isomeric with pyrargyrite, and xantho­conite, isomeric with proustite. Other pairs of isomorphous argentiferous minerals are: the cubic polybasite, 9Ag2S∙Sb2S3, and pearceite, 9Ag2S·As2S3; and the germanium minerals argyrodite, 4Ag2S∙GeS2, and canfieldite, 4Ag2S∙(Sn,Ge)S2.

*Physical Properties.—*In appearance silver presents a pure white colour with a perfect metallic lustre. It is the most malleable and ductile of all metals with the exception of gold: one gramme can be drawn out into a wire 180 metres long, and the leaf can be beaten out to a thickness of 0∙00025 mm.; traces of arsenic, antimony, bismuth and lead, however, make it brittle. In hardness it is superior to gold, but inferior to copper. Its specific gravity, according to G. Rose, lies between 10∙514 and 10∙619 at 14°; an average value is 10∙57. Its specific heat is 0∙05701 (Regnault) or 0∙0559 (Bunsen); its coefficient of linear expansion is 0∙00001921. Its thermal conductivity is, according to Wiedemann and Franz, superior to that of other metals, being in the ratio of 100:74 as compared with copper and 100:54 with gold; it is the most perfect conductor of electricity, standing to copper in the ratio 100:75, and to gold 100:73. Silver melts at about 1000°C.; recent determinations give 960·7° (Heycock and Neville) and 962° (Becquerel); at higher temperatures it volatilizes with the formation of a pale blue vapour (Stas). Its vapour density has been determined at 2000°, and corresponds to a monatomic molecule. When molten, silver occludes the oxygen of the atmosphere, absorbing 20 times its own volume of the gas; the oxygen, however, is not permanently retained, for on cooling it is expelled with great violence; this phenomenon is known as the “ spitting ” of silver. It is prevented by preserving the molten metal from contact with air by covering the surface with non-oxidizing agents, or by traces of copper, bismuth or zinc.

*Chemical Properties.—*Silver is not oxidized by oxygen, but resembles mercury in being oxidized by ozone. It has no action on water. It is readily soluble in dilute nitric acid, nitric oxide and silver nitrate being formed; it also dissolves in hot, strong sulphuric acid, sulphur dioxide being evolved. Hydrochloric acid forms a surface film of silver chloride; hydriodic acid