shelter himself under the authority of Plato; but, as the Xeno- cratean numbers, though professedly ideal as well as mathe­matical, were in fact mathematical only, this return to the Platonic terminology was no more than an empty form. It would seem, then, that Academic scepticism began with those who had been reared by Plato himself, having its origin in their acceptance of the scientific element of his teaching apart from the ontology which had been its basis. In this way, and, so far as the present writer can see, in this way only, it is possible to understand the extraordinary revolution which converted Platonism, philo- sophical and dogmatic, into Academicism, scientific and sceptical. It is as the official representative of this scientific and sceptical departure that Speusippus is entitled to a place in the history of philosophy.

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SPEY, a river in the Highlands of Scotland. It rises in Mt Clach-a-Cheannaiche in the north of Lochaber, in Inverness- shire, at a height of 1497 ft. above the sea. A mile from its source it forms the small Loch Spey, and 31 m. lower down it expands into the larger Loch Inch. After crossing the boundary of Elginshire, below Grantown, it pursues an extremely serpentine course, as far as Craigellachie, where it begins to flow due northwards, becoming wholly a Moray stream as it approaches Fochabers, and faIling by several mouths into the Moray Firth at Kingston. Its total length is about 110 m. It is the most rapid river in Scotland and is nowhere properly navigable, though at Speymouth in its lowest reaches some ship-building has been intermittently carried on. The strength of its current is due partly to its lofty origin, and partly to the volume of water contributed by numberless affluents from the mountainous regions of its birth. The more important tributaries are, on the left, the Markie, Calder, Dulnain, Tulchan, Ballintomb and Rothes and, on the right, the Mashie, Truim, Tromie, Feshie, Nethy, Avon, Fiddich and Mulben. Its area of drainage is 1300 sq. m. At certain points the stream attains a considerable width, as at Alvie, where it is 150 ft. wide, and at Kingussie, where its width is from 80 to 100 ft. From below Craigellachie, and especially on the low-lying coast-land, pools or stretches of fair size become frequent. For beauty of scenery Strathspey holds its own with any of the great valleys of Scotland. As a salmon river the Spey yields only to the Tay and Tweed. It passes many interest­ing spots in its long career, such as Laggan; Cluny Castle, the seat of Cluny Macpherson; Craig Dhu, the “ black rock,” and Kingussie. It flows past the pine forests of Rothiemurchus; Granton, the capital of Strathspey; Cromdale, where the clans- men suffered defeat at the hands of William III.’s troops in 1690; Ballindalloch, with a splendid Scottish baronial castle, the seat of the Macpherson-Grants; and Charlestown of Aberlour and its fine cataract.

**SPEZIA,** a city of Liguria, Italy, in the province of Genoa, 56 m. S.E. of that town by rail, 49 ft. above sea-level. Pop. (1906), 41,773 (town); *75,756* (commune); in 1861 only 11,556. It is the chief naval harbour of Italy, having been adopted as such in 1861. The Bay of Spezia is sheltered from all except southerly winds, and on its western shore are numerous openings, which afford perfectly safe anchorage in aIl weathers. The entrance is protected by forts, while a submarine embankment, 2 m. long, renders it secure. The arsenal consists of three depart­ments, the principal of which is 3937 ft. long, with an average width of 2460 ft. The chief basin is 23 acres in extent, and the second—connected with the first by a canal 91 ft. wide—36 acres. Both basins have an average depth of between 33 and 35 ft. The second basin gives access to the docks, of which there are six; two 390 ft. long, two 42o ft. long, one 500 ft. long, and one 650 ft. long. The establishment of San Vito is devoted entirely to the production of artillery; that of San Bartolomeo is exclusively used for electrical works and the manufacture of submarine weapons, especially torpedoes. The arsenal was constructed by General Chiodo (d. 1870), whose statue rises at the entrance, and near it are the naval barracks and hospital. Though the town itself, with the barracks and military hospital as its principal buildings, presents little to attract the foreign visitor, the beauty of the gulf and of the neighbouring country has brought Spezia into some repute as a winter resort, and it is also visited in summer for sea-bathing. The walls and gates of the old city are for the most part destroyed. The opening of a railway across the Apennines (there is a branch leaving the coast line at Vezzano, and joining the line from Sarzana at S. Stefano di Magra), placed Spezia in communication with Parma and the most fertile regions of the Po valley, and so stimulated commerce that a new commercial port to the east of the city was built. This harbour consists of a broad quay with 657 ft. of wharfage, and of a mole 1639 ft. long with 984 ft. of wharfage. The basin of the harbour is about 26 ft. deep. A branch railway connects the wharves directly with the main line. Since the opening of the new port the traffic has considerably increased, and it exports oil, pig-lead, silver, flour, wine, marble and sandstone for paving purposes, while it imports quantities of coal, iron, cereals, phosphates, timber, pitch, petroleum, and mineral oils. The import of coal in 1906 was 439,494 tons, being nearly double the average for 1901-1905. The tonnage of vessels entered was over 600,000, an increase of about 25% on that of 1905. Several important industrial establishments lie along the bay, including large lead and silver works at PertusoIa (see Lerici), submarine cable works, a shipyard at Muggiano for the construction of mercantile vessels up to 10,000 tons, a branch of the Vickers Terni works for armour plate, several motorboat works, brick and tile works, &c.

The origin of Spezia is doubtful; but it probably rose after the destruction of Luna. Sold by one of the Fieschi in 1276 to Genoa, the town was fortified by its new possessors and made the seat of a governor of some importance. It became a city in the 16th century. The idea of making the Gulf of Spezia a great naval centre was first broached by Napoleon I.

**SPHAERISTERIUM** (Gr. *σφαιριστηρcov, σφαιρα,* ball), the term in Classic architecture given to a large open space connected with the Roman thermae, for exercise with balls after the bather had been anointed; they were also provided in the Roman villas.

**SPHENE,** a mineral consisting of calcium titano-siIicate, CaT1SiO5, crystallizing in the monoclinic system. The crystals vary considerably in habit, but are generally thin and wedge- shaped; hence the name sphene, from the Greek *σφήν* (a wedge), given by R. J. Haüy in 1801. The earlier name titanite, given by Μ. H. Klaproth in 1795, is also in common use. Twinning on the ortho-pinacoid is not uncommon. The colour is green, yellow, brown or black, and the lustre resinous to adamantine;

crystals are transparent to opaque. The

hardness is 5½, and the specific gravity 3∙5. The refractive indices and the optic axial angle vary considerably with the colour of the light: the dispersion of the optic axes is

inclined, and the interference figure seen in convergent light between crossed nicols is

very characteristic of the mineral. Sphene

is sometimes cut as a gem-stone, though

it is rather too soft to stand much wear; owing to its high dispersive power it gives brilliant flashes of prismatic colours. As small embedded crystals, sphene has a wide distribution as an accessory constituent of many kinds of igneous rocks (granite, syenite, trachyte, phonolite, &c.), and also of gneiss, schist and crystalline limestone. Sharply-developed, transparent, pale green crystals are frequently associated with adularia, asbestos and quartz in the crystal-lined crevices of the schists of the Swiss and Tyrolese Alps. Large, rough and dark-coloured crystals are found at Arendal and Kragerö in Norway, and in granular limestone at Diana in New York and Eganville in Ontario. A greyish, compact and impure variety of sphene, known as