eight times victorious in thirteen dramatic contests. Of his tragedies (fifty in number) thirteen titles and some fragments remain (A. Nauck, *Tragicorum Graecorum Fragmenta,* 1887). His treatise on the art of rhetoric (according to Suïdas written in verse) and his speeches are lost. The names of two of the latter—*Socrates* and *Nomos* (referring to a law proposed by Theodectes for the reform of the mercenary service)—arc pre­served by Aristotle (*Rhetoric,* ii. 23, 13, 17). The *Theodectea* (Aristotle, *Rhet.* iii. 9, 9) was probably not by Theodectes, but an earlier work of Aristotle, which was superseded by the extant *Rhetorica.*

See monograph by C. F. Märcker (Breslau, 1835). There is a lengthy article on Theodectes in Smith’s *Dictionary of Greek and Roman Biography,* in which the connexion of the tragedy with the Artemisian contest is disputed.

**THEODOLITE,@@1** a surveying instrument consisting of two graduated circles placed at right angles to each other, for the measurement of horizontal and vertical angles, a telescope, which turns on axes mounted centrically to the circles, and an alidade for each circle, which carries two or more verniers. The whole is supported by a pedestal resting on footscrews, which are also employed to level the instrument. The size varies from a minimum with circles 3 in. in diameter to a maximum with a 36-in. horizontal and an 18-in. vertical circle.

Theodolites are designed to measure horizontal angles with greater accuracy than vertical, because it is on the former that the most important work of a survey depends; measures of vertical angles are liable to be much impaired by atmospheric refraction, more particularly on long lines, so that when heights have to be determined with much accuracy the theodolite must be discarded for a levelling instrument. When truly adjusted the theodolite measures the horizontal angle between any two objects, however much they may differ in altitude, as the pole star and any terrestrial object.

The instrument is made in three forms—the Y pattern, the Everest and the transit. Certain parts are common to all the forms in use and to the level. The stand is generally made circular in section, each of the three legs being shod at the lower extremity with steel. Their upper ends are hinged to a flat plate provided with a screwed collar of large diameter (fig. 1). Γo the legs is screwed a plate OO, which supports the lower side of the plate IT. This receives the ends of the screws SS by which the instru­ment is levelled, its annular portion being larger than the collar in OO, so that, until clamped by the screwed plate above it, the whole of the instrument except the legs can be moved hori­zontally in any direction to the extent of about in. This facili­tates centring over a point. The upper plate PP is bored centrally to receive a parallel or conical pillar which supports the lower circle of the theodolite or the arm of the level which carries the telescope. In the theodolite the edge of the plate *rr* is bevelled and divided into 360 or 400 degrees, and to half degrees, or to 20 minutes or 10 minutes, according to the size of the instrument. A collar is provided, which when tightened on the vertical axis, otherwise free to move, holds it rigidly in position with respect to the plate PP. To this collar is attached a slow-motion screw, working against a reaction spring, by which the plate *rr* can be rotated through a small arc. The upper plate carrying two, three or four verniers *vv* is attached to a vertical coned pillar passing through the centre of the larger pillar and rotating in it; this plate can be clamped to the lower plate by means of the screw C, and can be rotated with respect to it by the slow-motion screw *d.* On the upper plate are placed two small levelling bubbles, and two standards *it* are attached to the upper side of the plate for sup­porting the trunnions of the telescope T. The bearings for receiving these trunnions are V-shaped; the V on one side is fixed, while the other is cut through and can be narrowed or made wider, thus lifting or lowering the trunnion by means of two capstan-headed screws. To the telescope the vertical circle for reading angles in

altitude is fixed, and rotates with it; both can be clamped to the standard, and motion can be given by a suitable double-ended motion screw. The verniers are attached to arms *uu* bearing on an enlargement of one trunnion of the telescope, one arm pro­jecting downwards and embracing a projection on the standard *t.* To the same frame is attached a bubble, which should be parallel with the centre line of the verniers. The diagonal telescope *nn,* is provided with cross hairs, and is used for the final centring of the instrument over an object. The use of aluminium in the con­struction of all parts not liable to much wear is to be commended, owing to the smaller weight. The Y theodolite differs from the transit in that the supports for the telescope are low, that the telescope rests in a cradle the trunnions of which rest on the sup­ports, and that a segment of a circle attached to the cradle replaces

the vertical circle. When it is desired to read a line in the reverse direction the telescope is lifted out of the cradle, turned end for end, and replaced in the Y bearings of the cradle again. In the Everest theodolite the supports are low and the telescope cannot be transited. The instrument is similar to that described above, except that the vertical circle is not continuous, but is formed of two arcs.

In Germany and elsewhere refracting theodolites and transit instruments are sometimes employed. The eye end of the tele­scope tube is removed—a counterpoise to the object end being substituted in its place—and a prism is inserted at the intersection of the visual axis with the transit axis, so that the rays from the object-glass may be reflected through one of the tubes of the transit axis to an eye-piece in the pivot of this tube. In this case the pillars need only be high enough for the counterpoise to pass freely over the plate of the horizontal circle: but the observer has always

@@@1 This word has been a puzzle to etymologists. Various ingenious explanations have been given, all based on the apparent Greek form of the word; thus it has been derived from θeασ0αι, to see, òδós, way, and λιτós, smooth, plain; from θϵίν, to run, and δόλιχόs, long, and in other ways equally fanciful. Another imaginary origin has been suggested in a corruption of “ the O deleted,” *i.e.* crossed out, the circle being crossed by diameters to show the degrees; others have found in it a corruption of “ the alidade ” (*q.v.*). It would appear, however, to be taken from the O. Fr. *theodolet* or *theodelet,* the name of a treatise by one Theodulus, probably a mathematician (see *Notes and Queries,* 3rd series, vii. 337, 428, &c. Skeat, *Etym. Dict.,* 1910).