determine the zenith point of the circle, the telescope is directed vertically downwards and a basin of mercury is placed under it, forming an absolutely horizontal mirror. Looking through the telescope the observer sees the horizontal wire and a reflected image of the same, and if the telescope is moved so as to make these coincide, its optical axis will be perpendicular to the plane of the horizon, and the circle reading will be 180° + zenith point. In observations of stars refraction has to be taken into account as well as the errors of graduation and flexure, and, if the bisection of the star on the horizontal wire was not made in the centre of the field, allowance must be made for curvature (or the deviation of the star’s path from a great circle) and for the inclination of the hori­zontal wire to the horizon. The amount of this inclination is found by taking repeated observations of the zenith distance of a star during the one transit, the pole star being the most suitable owing to its slow motion.

Attempts have been made in various places to record the transits of a star photographically; with most success at the Georgetown College Observatory, Washington (since 1889). A sensitive plate is placed in the focus of a transit instrument and a number of short exposures made, their length and the time they are made being registered automatically by a clock. The exposing shutter is a thin strip of steel, fixed to the armature of an electromagnet. The plate thus gives a series of dots or short lines, and the vertical wires are photographed on the plate by throwing light through the object-glass for one or two seconds. This seems to give better results than the method adopted at the Paris observatory, where the plate is moved by clock-work and the exposure is comparatively long, while the image of a fixed slit is photographed at different recorded instants.

Literature.—-The methods of investigating the errors of a transit circle and correcting the results of observations for them are given in Briinnow’s and Chauvenet,s manuals of spherical astronomy. For detailed descriptions of modern transit circles, see particularly the *Washington Observations* for 1865, the *Publications* of the Wash­burn Observatory (vol. ii.) and *Astronomische Beobachtungen zu Kiel* (1905). The Greenwich circle is described in an appendix to the *Greenwich Observations* for 1852. Accounts of photographic transit instruments will be found in *The Photochronograph* (Washing­ton, 1891), *Annales de Vobservatoire de Tokyo,* tome iii. and *Comptes rendus* (July 16, 1906). (J. L. E. D.)

**TRANSKEI,** one of the divisions of the Cape province, South Africa, east of the Kei River, being part of the country known variously as Kaffraria *((q.υ.),* “ the Native Territories ” (of the Cape) and the Transkeian Territories. The majority of the inhabitants are Fingo (*q.v*.).

**TRANSLATION** (Lat. *trans,* across, and l*alus,* the participle of *ferre,* to carry), literally a carrying over or transference from one to another, and so from one medium to another. Among the more literal usages is the translation of Enoch in the Bible (Heb. xi. 5), or the ecclesiastical removal of a bishop to another see. But the commonest sense of the word is in connexion with the rendering of one language into another.

The characteristics of a good translation in the literary sense, and the history of the influence, through translations, of one literature on another, are worth more detailed notice. Dryden has prescribed the course to be followed in the execution of the ideal translation: “ A translator that would write with any force or spirit of an original must never dwell on the words of his author. He ought to possess himself entirely, and perfectly comprehend the genius and sense of his author, the nature of the subject, and the terms of the art or subject treated of; and then he will express himself as justly, and with as much life, as if he wrote an original; whereas, he who copies word for word loses all the spirit in the tedious transfusion.” Comparatively few translators have satisfied this canon. A writer capable of attain­ing the standard set up by Dryden is naturally more disposed to use his powers to express his own views than those of his foreign predecessors. No doubt at all times, and in all countries, translations have usually been produced for utilitarian purposes, and not from artistic motives. In the first instance we may assume that translations were undertaken in a spirit of educa­tional propaganda as a means of communicating new ideas and new facts to a somewhat uninstructed and uncritical public, indifferent as to matters of form. But, though the translator’s primary motive is didactic, he is insensibly led to reproduce the manner as well as the matter of his original as closely as possible. Montaigne warns aspirants of the difficulty in dealing with authors remarkable for the finish of their execution. “ Il faict bon,” he writes in the *Apologie de Raimond Sebonde,* “ traduire les aucteurs comme celuy-là ou il n’y a guères que la matière à représenter; mais ceux qui ont donné beaucoup à la grace et à l’élégance de langage ils sont dangereux à entreprendre nommé­ment pour les rapporter à un idiome plus foible.” As it happens, however ⅛he task of translating foreign masterpieces has frequently been undertaken by writers of undisputed literary accomplishment whose renderings have had a permanent effect on the literature of their native country.

It was certainly the case when Rome, having conquered Greece, was captured by her captive. There is much point and little exaggeration in the statement that “ when the Greek nation became a province of Rome, the Latin literature became a province of the Greek and this peaceful victory was initiated by a series of translations made by writers of exceptional ability and, in some cases, of real genius. The first translator whose name is recorded in the history of European literature is L. Livius Andronicus, a manumitted Greek slave who about 240 B.c., rendered the *Odyssey* into Saturnian verse. This transla­tion, of which some fragments are preserved, was long in use as a school text, for Horace studied it under the formidable Orbilius;· but Andronicus appears to have recognized his mistake in using the native Latin measure as a vehicle of literary expression, and is said to have rendered Greek tragedies and comedies into metres corresponding to those of his Greek originals. The deci­sion was momentous, for it influenced the whole metrical develop­ment of Latin poetry. The example set by Andronicus was followed by Naevius and Ennius, both of whom laid the founda­tions of the Latin theatre by translating Greek plays—especially those of Euripides—and naturalized in Rome the hexameter, which, as practised later by Lucretius and Virgil, was destined to become “the stateliest measure ever moulded by the lips of man.” The tradition of translating more or less freely was continued by Pacuvius, the nephew of Ennius, as well as by Plautus and Terence, whose comedies are skilful renderings or adaptations from the New Attic Comedy of Philemon, Diphilus and Menander. A persistent translator from the Greek was Cicero, who interpolates in his prose writings versified renderings of passages from Homer, Aeschylus, Sophocles and Euripides which prove the injustice of the popular verdict on his merits as a poet. Cicero not only translated the oration of Demosthenes *On the Crown,* but also made Latin versions of Plato’s *Timaeus* (part of which survives), of Xenophon’s *Oeconomicus,* and of the *Phaenomena,* an astronomical poem by Aratus of Soli, an Alexandrian imitator of Hesiod. This last performance was a tribute to the prevailing fashion of the moment, for the Alex­andrian poets had supplanted the early Greek school in favour among the literary circles of Rome. To the foregoing list may be added the great name of Catullus, whose *Coma Berenices* is translated from Callimachus, and Cornelius Gallus is mentioned as a translator of Euphorion. Complete translations became less and less necessary as a knowledge of Greek spread among the educated class. But the practice of translating fragments of Greek verse continued throughout the classic period of Latin literature, and the translations of Greek originals incorporated by Virgil were duly pointed out by Octavius Avitus.

The knowledge of Greek declined with the empire, and trans­lations were accordingly produced for the benefit of students who were curious concerning the philosophic doctrines of the Athenians and the Neoplatonists. Porphyry’s introduction to Aristotle’s *Categories* was translated by Victorinus about the reign of Julian the Apostate; at the end of the 5th century this introduction was once more translated by Boetius, whose trans­lations of Aristotle’s *Categories* and other logical treatises began the movement which ended in establishing the Greek philosopher as the most profound and authoritative exponent of intellectual problems during the middle ages. Plato was less fortunate, for he was known to students chiefly by the Latin version of the *Timaeus* made by Chalcidius (it is said) for Hosius, the bishop of Cordova. Cassiodorus, the contemporary of Boetius, went farther afield when he ordered a Latin translation of Josephus to be prepared; but the interest in Aristotle extended to the