the required thickness. A contact-lever, delicate level, or electric contact arrangement may be attached to the sphero- meter in order to indicate the moment of touching more precisely than is possible by the sense of touch. To mea­sure the radius of a sphere—*e.g.,* the curvature of a lens— the spherometer is levelled and read, then placed on the sphere, adjusted until the four points exert equal pressure, and read again. The difference gives the thickness of that portion of the sphere cut off by a plane passing through the three feet ; and, since the feet are equidistant, this dis­tance (*a*) being known gives the value (*R*) of the radius

from the formula 2*R = a + h,* where *h* is the thickness of

the lenticular segment. The *well spherometer@@*1 is adapted for measuring small spherical lenses. The true plane on which the instrument stands is perforated by a cylindrical well of known diameter. A plate applied to the lower edge of the well by a spring is adjusted to be parallel to the large plane, and the spherometer screw, being centred over the well, is run down until it touches the plate, and then read. The plate is removed ; the lens put in its place; the point—still accurately centred—is brought down ; and the screw is read again. The difference be­tween these readings gives the height of the section of the lens above the lower edge of the well. Calling this height *h* and the radius of the cylindrical well *r,* the radius *R* of the sphere is got by the formula 2*R = ^ + h.* The sphero­meter can be applied to test the sphericity of a globe, and may be used on either a convex or a concave surface.

SPHINX, a hybrid creature of Egyptian and Greek art and mythology. In Egypt the sphinxes are colossal images of granite or porphyry, with a human head and breast and the body of a lion (wingless) lying down. The largest and most famous is that of Gizeh, described in vol. vii. p. 772. The head of the sphinx is usually that of a man, but female heads are said to occur occasionally. From Egypt the figure of the sphinx passed to Assyria, where it appears with a bearded male head on cylinders ; the female sphinx, lying down and furnished with wings, is first found in the palace of Esarhaddon (7th century b.c.). Sphinxes have been found in Phœnicia, one at least being winged and another bearded. In Asia Minor an ancient female sphinx, but wingless, stands on the sacred road near Miletus. Sphinxes of the usual Greek type (female heads with bodies of winged lions) are represented seated on each side of two doorways in an ancient frieze found by Sir Charles Fellowes at Xanthus in Lycia, and now in the British Museum. The same type appears on the early sculptures of the temple at Assus. In the early art of Cyprus—that half-way house between Asia and Greece— sphinxes of this type are not uncommon. On the other hand, on a gem of Phoenician style found at Curium in Cyprus there appear two male (bearded) sphinxes, with the tree of life between them. With regard to Greece proper, in the third tomb on the acropolis of Mycenæ were found six small golden sphinxes ; they are beardless, but the sex is doubtful. In the ancient tomb discovered in 1877 at Spata near Athens (which represents a kindred but somewhat later art than the tombs at Mycenæ) were found female winged sphinxes carved in ivory or bone. Sphinxes on glass plates have been found in graves at Camirus in Rhodes and on gold plates in Crimean graves. Sphinxes were represented on the throne of Apollo at Amyclæ ; in the best period of Greek art a sphinx was sculptured on the helmet of the statue of Athene in the Parthenon at Athens ; and sphinxes carrying off children were sculptured on the front feet of the throne of Zeus at Olympia.

In Greek mythology the most famous sphinx was that of Thebes in Bceotia. She is first mentioned by Hesiod *(Theog.,* 326), who calls her the daughter of Orthus and Chimæra. According to Apollonius (iii. 5, 8), she was the daughter of Typhon and Echidna, and had the face of a woman, the feet and tail of a lion, and the wings of a bird. She dwelt on a bald rocky mountain at the south­east corner of the Copaic lake ; the name of the mountain was Phicium (now Fagas), which was derived from Phix, the Æolic form of sphinx. The Muses taught her a riddle and the Thebans had to guess it. Whenever they failed she carried one of them off and devoured him. The riddle was this : What is that which is four-footed, three-footed, and two-footed? At last Œdipus guessed correctly that it was man ; for the child crawls on hands and feet, the adult walks upright, and the old man supports his steps with a stick. Then the sphinx threw herself down from the mountain.

The story of the sphinx’s riddle first occurs in the Greek tragedians. Milchhöfer believes that the story was a mere invention of Greek fancy, an attempt to interpret the mysterious figure which Greek art had borrowed from the East. On the other hand, he holds that the destroying nature of the sphinx was much older, and he refers to instances in both Egyptian and Greek art where a sphinx is seen seizing and standing upon a mail. And, whereas the Theban legend is but sparingly illustrated in Greek art, the figure of the sphinx appears more commonly on tombs, sculptured either in the round or in relief. From this Milchhofer seems to infer that the sphinx was a symbol of death. The word “sphinx” is Greek, being derived from *σφίγγειv,* "to draw tight. ”

See Brugsch, *History of Egypt,* vol. i. pp. 79 *sq.,* 414 *sq.* ; Cesnola, *Cyprus,* pp. 110, 114 *sq.,* 263 *sq.,* and plate xxxvii. No. 13; Schliemann, *Mycenæ,* pp. xlv., 184 ; and especially Milchhofer, in *Mitth, d. deutsch. archäol. Instit. in Athen,* 1879, p. 46 *sq.*

SPHYGMOGRAPH. See Vascular System.

SPICE ISLANDS. See Moluccas.

SPIDER. See Arachnida, vol. ii. p. 290 *sq.*

SPIKENARD, or Nard (Hebrew *nērd*; Gr. *vάρδoς,* from Sanskrit *naladwitha,* the change from “ r ” to “ 1 ” seeming to indicate that the word came through Persia),@@2 a celebrated perfume which seems to have formed one of the most durable aromatic ingredients in the costly un­guents used by the Romans and Eastern nations. The oint­ment prepared from it (“ointment of pistic nard”@@3) is mentioned in the New Testament (Mark xiv. 3-5; John

xii. 3-5) as being “very costly,” a pound of it being valued at more than 300 denarii (over £10). This appears to represent the prices then current for the best quality of nard, since Pliny (*H.N*., xii. 26) mentions that nard spikes reached as much as 100 denarii per lb, and, although he does not mention the price of nard ointment, he states (xiii. 2) that the “unguentum cinnamominum,” a similar preparation, ranged from 25 to 300 denarii according to its quality. Nard ointment also varied considerably in price from its liability to sophistication (Id., xii. 26, 27 ;

xiii. 2). The ingredients of the genuine ointment *(un­guentum nardinum sive foliatum),* Pliny tells us (xiii. 2), were Indian nard, juncus (the leaves of *Andropogon Schοenanthus,* L.), costus (the root of *Aplotaxis auriculata,* DC.), amomum (the fruits of *Amomum Cardamomum,* L.), myrrh (the gum-resin of *Balsamodendron Myrrha,* Nees), balm (the oleo-resin of *Balsamodendron Opobalsamum),* omphacium or oleum omphacinum (the oil expressed from unripe olives), and balaninum (derived from *Balanites ægyptiaca*?*).* Dioscorides (i. 75) also remarks that malabathrum (the leaf of *Cinnamomum Tamala,* Nees) was sometimes added. Of these ingredients costus and amomum were most relied upon for increasing the fragrance and the nard for the stimulating and other virtues of the unguent.@@4

@@@1 A. M. Meyer, in American Journal of Science, 1886, xxxii. p. 61.

@@@2 See Fick, in *Orient u. Occident,* iii. p. 364. The Syrians and Arabs simply call it “ spike ” *(shebāltā, sunbul)* or “ the Indian spike.”

@@@3 The meaning of the word “pistic” is uncertain, some rendering it “genuine,” others “liquid,” and others taking it for a local name.

@@@4 The use of alabaster vessels for preserving these fragrant unguents