tempted, there is a great defect of vigour. The chief ob­jection againſt this work being claſſed with epic poems, ariſes from the minute details of virtuous policy, into which the author in ſome places enters ; and from the diſcourſes and inſtructions of Mentor, which recur upon us too often, and too much in the ſtrain of common place morality. Though theſe were well ſuited to the main design of the author, which was to form the mind of a young prince, yet they ſeem not congruous to the nature of epic poetry ; the object of which is to improve us by means of actions, characters, and ſentiments, rather than by delivering profeſſed and formal inſtruction.”

TELEPHIUM, true orpine, in botany: A genus of plants belonging to the claſs of *pentandria,* and order of *tri­gynia;* and in the natural ſyſtem ranging under the 54th or­der, *Miſcellaneae.* The calyx is pentaphyllous ; there are five petals, which are inſerted into the receptacle ; the capſule is unilocular and trivalvular. There are two ſpecies, the *imperati* and *oppositifolia.*

TELESCOPE, an optical inſtrument for viewing distant objects ; ſo named by compounding the Greek words τηλε f*ar off,* and *to look at* or *contemplate.* This name is commonly appropriated to the larger sizes of the inſtru­ment, while the smaller are called perspective-glasses, spy-glasses, opera-glasses. A particular kind, which is thought to be much brighter than the reſt, is called a **NIGHT GLASS.**

To what has been ſaid already with reſpect to the inven­tor of this moſt noble and uſeful inſtrument in the article Optics, we may add the two following claims.

Mr Leonhard Digges. a gentleman of the laſt century of great and various knowledge, poſitively aſſerts in his *Stratoticοs,* and in another work, that his father, a military gen­tleman, had an inſtrument which he uſed in the field, by which he could bring diſtant objects near, and could know a man at the diſtance of three miles. He ſays, that when his father was at home he had often looked through it, and could diſtinguiſh the waving of the trees on the oppoſite side of the Severn. Mr Digges reſided in the neighbourhood of Briſtol.

Francis Fontana, in his *Cebstial Observatiοns,* publiſhed at Naples in 1646, ſays, that he was aſſured by a Mr Hardy, advocate of the parliament of Paris, a perſon of great learn­ing and undoubted integrity, that on the death of his fa­ther, there was found among his things an old tube, by which diſtant objects were diſtinctly ſeen; and that it was of a date long prior to the teleſcope lately invented, and had been kept by him as a ſecret.

It is not at all improbable, that curious people, handling spectacle glaſſes, of which there were by this time great va­rieties, both convex and concave, and amuſing themſelves with their magnifying power and the singular effects which they produced in the appearances oſ things, might ſometimes chance ſo to place them as to produce diſtinct and en­larged viſion. We know perfectly, from the table and ſcheme which Sirturus has given us of the tools or dishes in which the ſpectacle-makers faſhioned their glasses, that they had convex senſes formed to ſpheres of 24 inches diameter, and of 11 inferior ſizes. He has given us a ſcheme of a ſet which he got leave to meaſure belonging to a ſpectacle-maker of the name of *Rogette* at Corunna in Spain; and he ſays that this man had tools of the ſame ſizes for concave glaſſes. It alſo appears, that it was a general practice (of which we do not know the preciſe purpoſe) to uſe a con­vex and concave glaſs together. If any perſon ſhould chance to put together a 24-inch convex and a 12-inch concave (wrought on both sides) at the diſtance of 6 inches, he would have diſtinct viſion, and the object would appear of double size. Concaves of 6 inches were not uncommon, and one ſuch combined with the convex of 24, at the di­ſtance of 9 inches, would have diſtinct viſion, and objects would be quadrupled in diameter. When ſuch a thing oc­curred, it was natural to keep it as a curioſity, although the *rationale* of its operation was not in the leaſt underſtood. We doubt not but that this happened much offener than in theſe two inſtances. The chief wonder is, that it was not frequent, and taken notice of by ſome writer. It is pretty plain that Galileo’s firſt teleſcope was of this kind, made up of ſuch spectacle-glaſſes as he could procure; for it mag­nified only three times in diameter: a thing eaſily procured by ſuch glaſſes as he could find with every ſpectacle-maker. And he could not but obſerve, in his trials of their glaſſes, that the deeper concaves and flatter convexes he employed, he produced the greater amplification ; and then he would find himſelf obliged to provide a tool not uſed by the ſpec­tacle makers, viz. either a much flatter tool for a convex ſurface, or a much ſmaller ſphere for a concave : and, notwithſtanding his telling us that it was by reflecting on the nature of refraction, and without any inſtruction, we are perſuaded that he proceeded in this very way. His next teleſcope magnified but five times. Now the slighteſt ac­quaintance with the obvious laws of refraction would have directed him at once to a very ſmall and deep concave, which would have been much eaſier made, and have mag­nified more. But he groped his way with ſuch ſpectacle- glaſſes as he could get, till he at laſt made tools for very flat object-glaſſes and very deep eye-glaſſes, and produced a teleſcope which magnified about 25 times. Sirturus ſaw it, and took the meaſures of it. He afterwards ſaw a ſcheme of it which Galileo had ſent to a German prince at Inſpruch, who had it drawn (that is, the circles for the tools) on a table in his gallery. The object-glaſs was a plano­convex, a portion of a ſphere, of 24 inches diameter ; the eye-glaſs was a double concave of 2 inches diameter : the focal diſtances were therefore 24 inches and 1 inch nearly. This muſt have been a very lucky operation, for Sirturus ſays it was the beſt telescope he had ſeen ; and we know that it requires the very beſt work to produce this magnifying power with ſuch ſmall ſpheres. Teleſcopes continued to be made in this way for many years; and Ga­lileo, though keenly engaged in the obſervation of Jupiter’s ſatellites, being candidate for the prize held out by the Dutch for the diſcovery of the longitude, and therefore much intereſted in the advantage which a convex eye-glaſs would have given him, never made them of any other form. Kepler publiſhed his Dioptrics in 1611; in which he tells us, all that he or others had diſcovered of the law of refraction, viz. that in very ſmall obliquities of incidence, the angle of refraction was nearly 1/3d of the angle of incidence. Thiswas indeed enough to have pointed out, with ſufficient exactneſs, the conſtruction of every optical inſtrument that we are even now poſſeſſed of ; for this proportionality of the angles of incidence and refraction is aſſumed in the conſtruction of the optical figure for all of them ; and the deviation from it is ſtill considered as the *refinement* of the art, and was not brought to any rule till 50 years after by Huyghens, and called by him aberration. Yet even the ſagacious Kepler ſeems not to have ſeen the advantage of any other conſtruction oſ the teleſcope ; he juſt ſeems to acknow­ledge the poſſibility of it : and we are ſurpriſed to ſee wri­ter's giving him as the author, of the aſtronomical teleſcope, or even as hinting at its conſtruction. It is true, in the laſt propoſition he ſhows how a telescope may be made *appa­rently* with a convex eye-glaſs ; but this is only a frivolous