flint-glass is brought back to EHF by a flint-glass prism, and the figure compressed in the same gradual manner, all the colours will coalesce into a white spot.

But when flint-glass is employed to bring back the oblique spectrum formed by common glass, it forms the crooked spectrum E*h*F. Now let the figure be compressed. The curve E*h*F will be doubled down on the line H*h*, and there will be formed a compound spectrum H*h*, quite unlike the common spectrum, being purple or claret coloured at H by the mixture of the extreme red and violet, and green edged with blue at *h* by the mixture of the green and blue. The fluid prisms would in like manner form a spectrum of the same kind on the other side of H.

This is precisely what is observed in achromatic object-glasses made of crown-glass and flint: for the refraction from A to R corresponds to the refraction of the convex crown-glass ; and the contrary refraction from R to E cor­responds to the contrary refraction of the concave flint- glass, which still leaves a part of the first refraction, pro­ducing a convergence to the axis of the telescope. It is found to give a purple or wine-coloured focus, and within this a green one, and between these an imperfect white. Dr Blair found, that when the eye-glass was drawn out be­yond its proper distance, a star was surrounded by a green fringe, by the rays of the green end of the spectrum, which crossed each other within the focus ; and when the eye-glass was too near the object-glass, the star had a wine- coloured fringe. The green rays were ultimately most re­fracted. We should expect the fringe to be of a blue colour rather than a green. But this is easily explained. The extreme violet rays are very faint, so as hardly to be sensible ; therefore, when a compound glass is made as achromatic as possible to our senses, in all probability (nay certainly) these almost insensible violet rays are left out, and perhaps the extreme colours which are united are the red and the middle violet rays. This makes the green to be the mean ray, and therefore the\_most outstanding when the dispersions are not proportional.

Dr Blair very properly calls these spectrums, H*h* and H*h*', *secondary spectrums,* and seems to think that he is the first who has taken notice of them as indispensably neces­sary. But this subject was touched by Clairaut, and fully discusscd by Boscovich.

The most essential service which the public has received at the hands of Dr Blair, is the discovery of fluid mediums of proper dispersive power. By composing the lenses of such substances, we are at once freed from the irregula­rities in the refraction and dispersion of flint-glass, from which the chemists have not been able to free it. In what­ever way this glass is made, it consists of parts which dif­fer both in refractive and dispersive power ; and when taken up from the pot, these parts mix in threads, which may be disseminated through the mass in any degree of fineness. But they still retain their properties ; and when a piece of flint-glass has been formed into a lens, the eye, placed in its focus, sees the whole surface occupied by glis­tening threads or broader veins running across it. Great rewards have been offered for removing this defect, but hitherto to no purpose. We beg leave to propose the fol­lowing method. Let the glass be reduced to powder, and then melted with a great proportion of alkaline salt, so as to make a liquor silicum. When precipitated from this by an acid, it must be in a state of very uniform composition. If again melted into glass, we should hope that it would be free from this defect ; if not, the case seems to be desperate. But by using a fluid medium, Dr Blair was released from all this embarrassment ; and he acquired another immense advantage, that of adjusting at pleasure both the refractive and dispersive powers of his lenses. In solid lenses, we do not know whether we have taken the curvatures suited to the refractions till our glass is finished ; and if we have

mistaken the proportions, all our labour is lost. But when fluids are used, it is enough that we know nearly the re­fractions. We suit our focal distances to these, and then select our curvature, so as to remove the aberration of figure, preserving the focal distances. Thus, by properly tempering the fluid mediums, we bring the lens to agree precisely with the theory, perfectly achromatic, and the aberration of figure as much corrected as is possible.

Dr Blair examined the refractive and dispersive powers of a great variety of substances, and found great varieties in their actions on the different colours. This is indeed what every well-informed naturalist would expect. There is no doubt now among naturalists about the mechanical connection of the phenomena of nature ; and all are agreed that the chemical actions of the particles of matter are per­fectly like in kind to the action of gravitating bodies ; that all these phenomena are the effects of forces like those which we call attractions and repulsions, and which we ob­serve in magnets and electrified bodies ; that light is re­fracted by forces of the same kind, but differing chiefly in the small extent of their sphere of activity. We cannot derive much knowledge from what he has already publish­ed, because it was chiefly with the intention of giving a popular, though not an accurate, view of the subject. The constructions which are there mentioned are not those which he found most effectual, but those which would be most easily understood, or demonstrated by the slight theory which is contained in the dissertation ; besides, the manner of expressing the difference of refrangibility, perhaps chosen for its paradoxial appearance, does not give us a clear no­tion of the characteristic differences of the substances ex­amined. Those rays which are ultimately most deflected from their direction, are said to have become the most re­frangible by the combination of different substances, al­though in all the particular refractions by which this effect is produced, they are less refracted than the violet light. We can just gather this much, that common glass disperses the rays in such a manner that the ray which is in the con­fine of the green and blue occupies the middle of the prismatic spectrum ; but in glasses, and many other sub­stances which are more dispersive, this ray is nearer to the ruddy extremity of the spectrum. While therefore the straight line RC' (fig. 14) terminates the ordinates O*o'*, YY',G*g'*, &c., which represent the dispersion of common glass, the ordinates which express the dispersions of these substances are terminated by a curve passing through R and C', but lying below the line RC’. When therefore parallel heterogeneous light is made to converge to the axis of a convex lens of common glass, as happens at F (in fig. 8) the light is dispersed, and the violet rays have a shorter focal distance. If we now apply a concave lens of greater dispersive power, the red and violet rays are brought to one focus F; but the green rays, not being so much re­fracted away from F, are left behind at *φ,* and have now a shorter focal distance. But Dr Blair afterwards found that this was not the case with the muriate acid, and some solu­tions in it. He found that the ray which common glass causcd to occupy the middle of the spectrum, was much nearer to the blue extremity when refracted by these fluids. Therefore a concave lens formed of such fluids which united the red and violet rays in F', refracted the green rays to *f'.*

Having observed this, it was an obvious conjecture, that a mixture of some of these fluids might produce a medium, whose action on the intermediate rays should have the same proportion that is observed on common glass ; or that two of them might be found which formed spectra similarly divided, and yet differing sufficiently in dispersive power to enable us to destroy the dispersion by contrary refrac­tions, without destroying the whole refraction. Dr Blair accordingly found a mixture of ammoniacal and mercurial