

THE endowment of research by the State, or from public funds of any kind, is opposed on various grounds. It is well enough to leave to individual effort the conduct of such enterprises as are remunerative to the parties who conduct them; but it is a mistake to speak of scientific research as an "enterprise" at all. The mistake arises from the extraordinary pertinacity with which so-called "invention" is confounded with the discovery of scientific truth. New knowledge in biological or other branches of science cannot be sold; it has no marketable value. Neither by teaching in the form of popular lectures, nor by teaching university or professional students who desire, as a result, to pass some examination test, is it possible, where there is a fair field and no favor, for a man to gain a reasonable income, and at the same time to leave himself time and energy to carry on original investigations in science.

The distance of the sun is the base line, in terms of which almost every other lineal magnitude in astronomy is to be expressed. An accurate measurement of this base will infuse accuracy into all the other astronomical quantities which spring from it. When we have learnt the distance of the sun we can measure the bulk of the sun and his diameter; we can measure the great planet Jupiter or the rings of Saturn, and the scale of the whole solar system becomes known to us. Again, when we attack the loftiest problem in practical astronomy, and seek to stretch a sounding line over the vast abyss which divides our system from the stars, it is the distance of the sun which we must use as our measuring rod. No pains should be spared to give to so fundamental a unit all the precision of which it is capable. Let us define accurately the magnitude to be measured. The actual distance from the earth to the sun is not constant. In these autumnal months the distance is rapidly decreasing. We are at this moment drawing nearer and nearer to the sun at the rate of a thousand miles an hour. Next Christmas we shall be about a million and a half miles closer to the sun than we are to-night.