name of the angle whose character we have roughly indicated, and the slight uncertainty as to its true value renders it impossible to say within 300,000 miles just how far we are from the sun. When the total distance is equal to about 91,480,000 miles, the approach to certainty would seem to be near enough for all practical purposes. But forty times the earth's diameter is too extensive a departure from mathematical truth, even in regard to distances so enormous. Astronomers have, accordingly, set their minds on reducing this amount of uncertainty to a minimum of say .01 sec., *i. e.*, the absolute fixing of our distance from the sun, with a margin of only 50,000 miles still open to doubt. Careful observations of the approaching transit of Venus are the means relied upon to accomplish this scientific feat.

Between the hours of 9 o'clock of our time on the evening of Dec. 8 and 2 o'clock on the morning of Dec. 9, of the present year, trained observers from nearly every civilized nation in the world will, from carefully-selected points, be carefully scanning the passage of the planet Venus across the luminous disc of the sun. There has been no such phenomenon visible from the earth since 1769, and there will not be another, affording equal facilities for accurate observations, till the year 2004. Another transit will indeed take place eight years hence, but the sun's altitude above the horizon on that occasion will be too slight to present favorable conditions for observation. As the period of this year's transit occurs during the Northern Winter, the base of observation must be established for the most part south of the equator. Points of observation must be marked off in pairs, because the entire problem depends on ascertaining with perfect exactitude the time at which various stages of the transit are observed at widely separated stations on the earth's surface. In fact, this method of fixing the angle of the solar parallax is simply a working out, on a colossal scale, of the familiar geometrical process of constructing two sides of a triangle in order to determine the third. The largest attainable base of the presumed triangle would of course be the earth's diameter—180 degrees. But suppose two observers situated this distance apart, and to the one the sun at the time of transit would just be rising, while to the other it would be on the point of setting. For purposes of observation, however, the sun must not be lower, in either case, than 10° above the horizon The easterly observer must be so placed that the egress of Venus from the sun's disc shall conclude not too near sunset, and the corresponding observer at the west must be able to watch the ingress of the planet a little after sunrise. Of course this cannot be accomplished without a contraction of base considerably within the limit of 180°.

The length of this supposed base of the triangle, whose apex is the sun, requires in the first place to be determined with mathematical accuracy. In other words, it is necessary to carefully establish, by lunar observation what is called the absolute longitude of each station, and so to secure a perfect correspondence of astronomical time—say within a second—as a basis of observation between corresponding stations. This of itself requires some months of preparation, assisted by instruments of the utmost delicacy, and for the preliminary purpose several corps of observers are on the eve of departure from England to certain desolate regions of the Antarctic Ocean selected as the one extremity of the terrestrial base for the required triangle. Of course the conditions of the problem are rather more complicated than can be briefly and popularly indicated. The relative velocities of the earth and Venus must be taken into account; their relative distance from the sun enters into the calculation, so do questions of atmospheric refraction, and other delicate points which can hardly be briefly indicated without the use of scientific nomenclature. But this much can be readily remembered: Venus, moving faster than the earth, crosses the sun's face from east to west. The most easterly of two observers, therefore, is the first to see the black orb of Venus completely within the outer rim of the sun's disc; in scientific phrase, he is situated at the point of "greatest acceleration." The companion observer at the westerly end of the line sees the same phenomenon some twenty minutes later, and is said to be at the point of "greatest retardation." Let the exact moment say of two such critical points of the transit as the ingress and egress of the planet on the sun's disc be noted at each station, and the absolute time interval between the observations of two stations be compared with the distance and qualified by the other conditions to which we have referred, and the much-sought-for angle will be nearer determination than it is to-day.

England, France, Germany, and Russia are busily equipping astronomical expeditions to assist in solving what has been justly called "one of the sublimest problems of the universe." Telescopes equatorially mounted, and driven by clock-work, so as to remain steadily fixed on the sun after being once pointed to it; photo-telegraphs of the most delicate construction to present microscopically accurate transcripts of every phase of the transit; altazimuth and transit instruments, which are marvels both of massiveness and adjustment—such are among the articles required for the proper outfit of each expedition. While other countries are so busy, what are the United States doing? We have found previous attempts to answer this question not very satisfactory. We fear that matters are not much better at this late hour of the time available for preparation.

THE ASTRONOMICAL EVENT OF THE CENTURY.

Suppose a line drawn from the centre of the earth to its surface at the equator; suppose another line starting from the extremity of this latter and continued till it terminates in the centre of the sun, what is the mathematical expression which accurately describes the angle thus formed? Is it 8.92 sec., or is it .03 sec., more or less? That may appear a very abstruse and purely speculative question to some readers, yet all the science of navigation, and indeed all the results of applied astronomy, have sprung from the approximate solution of this very problem. The slight amount of uncertainty which still attaches to the answer, affects the accuracy of the lunar and planetary tables of every nautical almanac, and to a certain degree unsettles all questions of distance in regard to heavenly bodies, and of longitude in regard to places on the earth. The solar parallax is the scientific