

where a patient of his, after thirty years of suffering from the tic douloureux, got quickly rid of his pain after a few daily administrations of eight-grain doses of salicylate of soda.—*Correspondenz Blatt.*

**LANDING OF CLEOPATRA'S NEEDLE.**

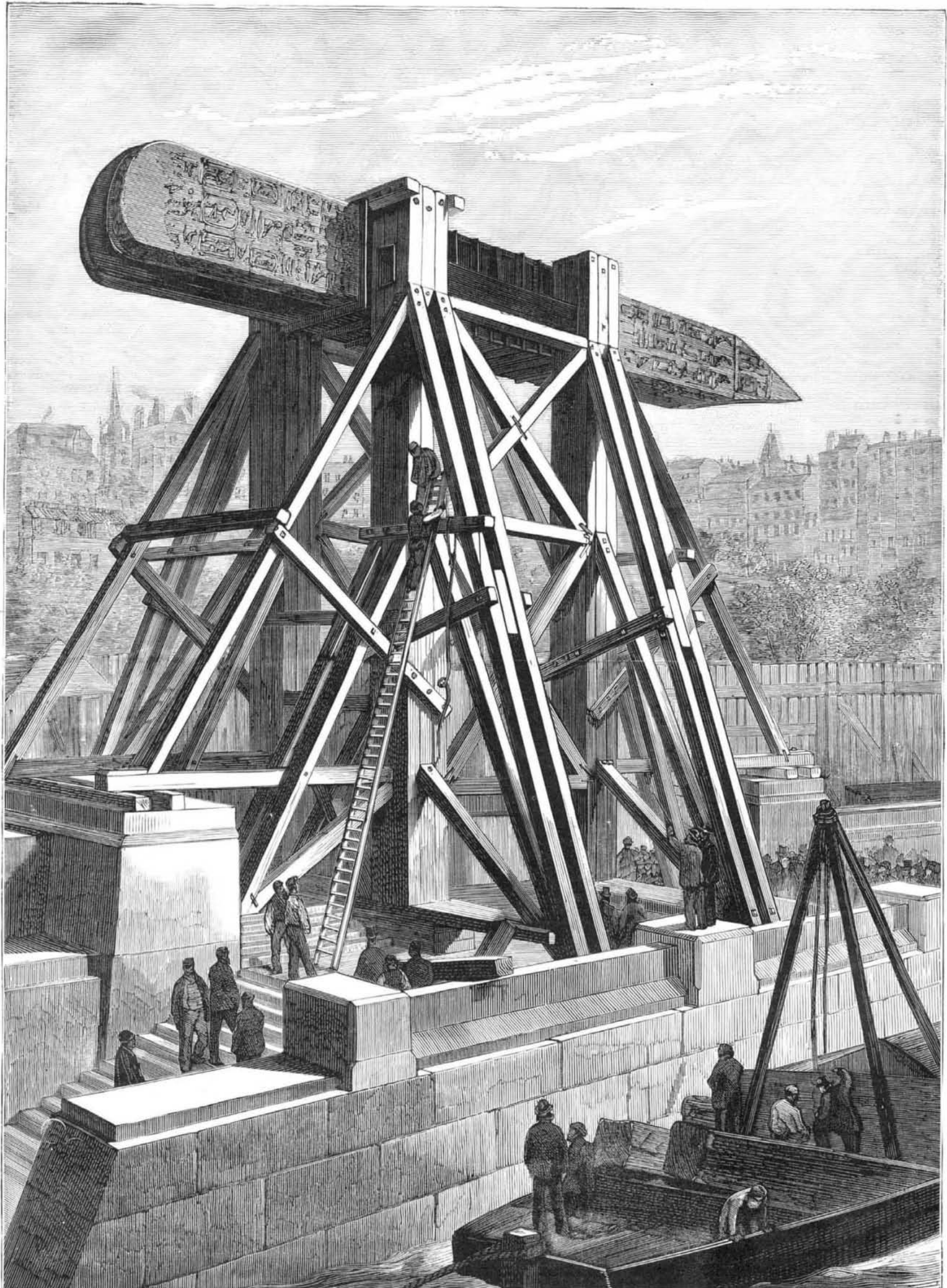
The difficulties which Mr. Dixon has had to contend with in carrying out his work in connection with the transport of the Egyptian obelisk to England having at last been overcome, the concluding and most difficult part of the undertaking, that of raising and placing the obelisk on its pedestal, is about to be commenced. A timber cradle has been prepared alongside the Adelphi steps, and by the time this paper

is published the Cleopatra will probably be safely landed upon it; she is then to be lifted by hydraulic jacks and moved forward at the same time, and afterward a little side-wise, until the stone lies across the center of its pedestal. The iron cylinder vessel, in which the voyage was made, will then be cut to pieces, and twenty feet in length of the center part of the obelisk will be incased in an iron jacket with protruding arms, resembling the trunnions of a monster-cannon. These trunnions will rest on two iron girders. A timber scaffolding will then be erected with four uprights, each formed of six balks of timber placed three and three together, the ends of the girders fitting into the spaces between the timbers. Hydraulic jacks will then be placed un-

derneath the girders, and the whole mass gradually lifted, the height gained being secured by solid timber packing. The stone will then exactly represent a monster cannon, and can be swung on its trunnions into a vertical position, and lowered on to its pedestal, which meantime will have been constructed beneath it. Our illustration, which is taken from the *London Graphic*, is drawn from the model to which Mr. Dixon's men are working.

**Heat Conductivity.**

Experiments lately made by M. Schuhmeister on the heat conductivity of cotton, wool, and silk, by a method similar to that employed by Stefan for determining the conduct-



THE MACHINERY FOR PLACING CLEOPATRA'S NEEDLE IN POSITION ON THE THAMES EMBANKMENT.

ing power of gases, have led to the following results: The heat conduction of air being considered = 1, that of cotton is (on an average) = 37, sheep's wool = 12, and silk = 11; the cotton and the wool were unwrought. The latter was washed merino wool; the silk was in the state of cocoon fibers.

#### THE TOTAL ECLIPSE OF THE SUN.

Extensive preparations are being made by the officers in charge of the National Observatory to observe the next total eclipse of the sun, which will take place on the 29th of this month. Congress having voted \$8,000 to pay the expenses, the work will not be crippled for lack of funds, and five expeditions have been organized by Admiral Rodgers. The following gives the members of the different parties and their proximate points of observation:

Professor S. Newcomb, Commander W. T. Sampson, Lieut. C. G. Bowman, and John Meier will locate at Creston, Wyoming. This party will photograph with one of the photo-heliographs used in photographing the transit of Venus in December, 1874. They will also observe contacts and look for intra-mercurial planets.

The following party will be stationed at Pueblo, Colorado: Professor A. Hall, Professor J. A. Rogers, Professor A. W. Wright, Mr. H. F. Gardner, and Mr. A. B. Wheeler. They will take photographs of the eclipse, corona, and all around it that can be gotten on a plate; make polariscopic observations of the light of the corona; observe time of contacts, and make a search for intra-mercurial planets.

The next party locates at Creston, Wyoming, and is made up as follows: Professor Wm. Harkness, Lieut. E. W. Sturdy, Assistant Astronomer A. M. Skinner, Messrs. L. E. Walker, A. G. Clark, and Professor O. H. Robinson. This party has the same instructions as Professor Hall's, except that instead of polariscopic observations they will take spectroscopic and thermo-electric observations.

At Pueblo, Colorado, there will also be stationed Professor J. R. Eastman, Professor Lewis Boss, Assistant Astronomer H. M. Paul, and Mr. H. S. Pritchett. This party will take polariscopic observations, observe contacts, search for planets, and make drawings of the corona.

The following party will be at Central City, Colorado: Professor E. S. Holden, Lieut. T. W. Very, and Dr. C. S. Hastings. They will go into the mountains southwest of Denver, search for planets, and investigate structure of corona.

In addition to these main expeditions, Mr. L. Trouvelot, of Cambridge, Mass., a most skillful artist, accompanied by his son, will go to Rawlins, Wyoming, to make a drawing of the corona.

Mr. G. W. Hill, of the Nautical Almanac Office, will be stationed on one of the mountains in Colorado to make drawings of the corona.

Prof. Ormond Stone, of Cincinnati, and Mr. Winslow Upton, of Cambridge, will observe the eclipse from the lofty peaks of Colorado.

General Myers and Professor Able, of the Signal Office, and Professor Langley, of Pittsburg, will go to Pike's Peak. They will be obliged to take their instruments apart and carry them by hand to an elevation exceeding 14,000 feet.

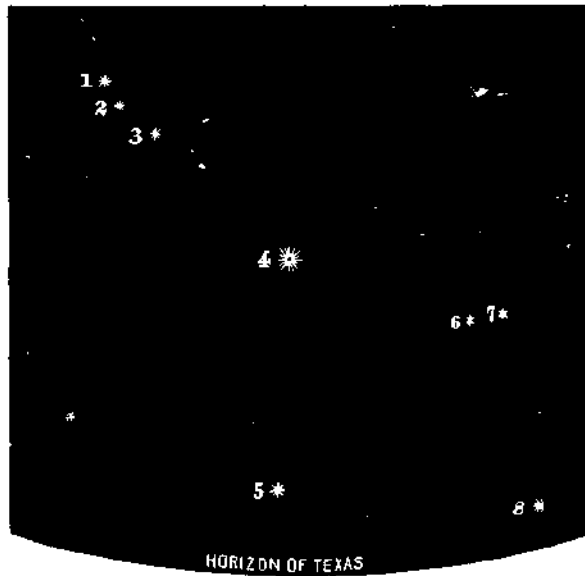
Mr. D. P. Todd will go to Texas and make arrangements for observing duration of totality near the limits of total eclipse.

Many distinguished English astronomers, and M. Jansen, the famous astronomer from Paris, are coming over to observe the eclipse.

Much interest is attached to the eclipse by our scientists, who look upon it as the means of determining many vexed questions. First, and perhaps the most important, as it is of practical value to all navigators, is the corrections that will be obtained to the present solar and lunar tables. Notwithstanding the remarkable accuracy already obtained, it is to be observed that the location of the central line of the eclipse as calculated by the American Nautical Almanac differs by about four miles from that derived from the English Nautical Almanac.

Important observations will be made respecting the physical constitution of the sun, from which our knowledge of that luminary will, it is hoped, be much increased. The corona is to be examined during the totality with the polariscope and spectroscope. These observations, however, will necessarily be comparatively few, as the duration of totality will not be more than three minutes in the north and two and a half in the south. The Mercury transit observations of last May, as far as they have been worked up, appear to demonstrate the fact that the tables of that planet were incorrect, as Le Verrier had said, and as it is thought possible that he might be correct in his supposition of an intra-mercurial planet, advantage of the sun's observation will be taken to examine the heavens in the neighborhood of the sun, for one or more small bodies supposed to belong to our system of planets. In addition to the telescopic scrutiny,

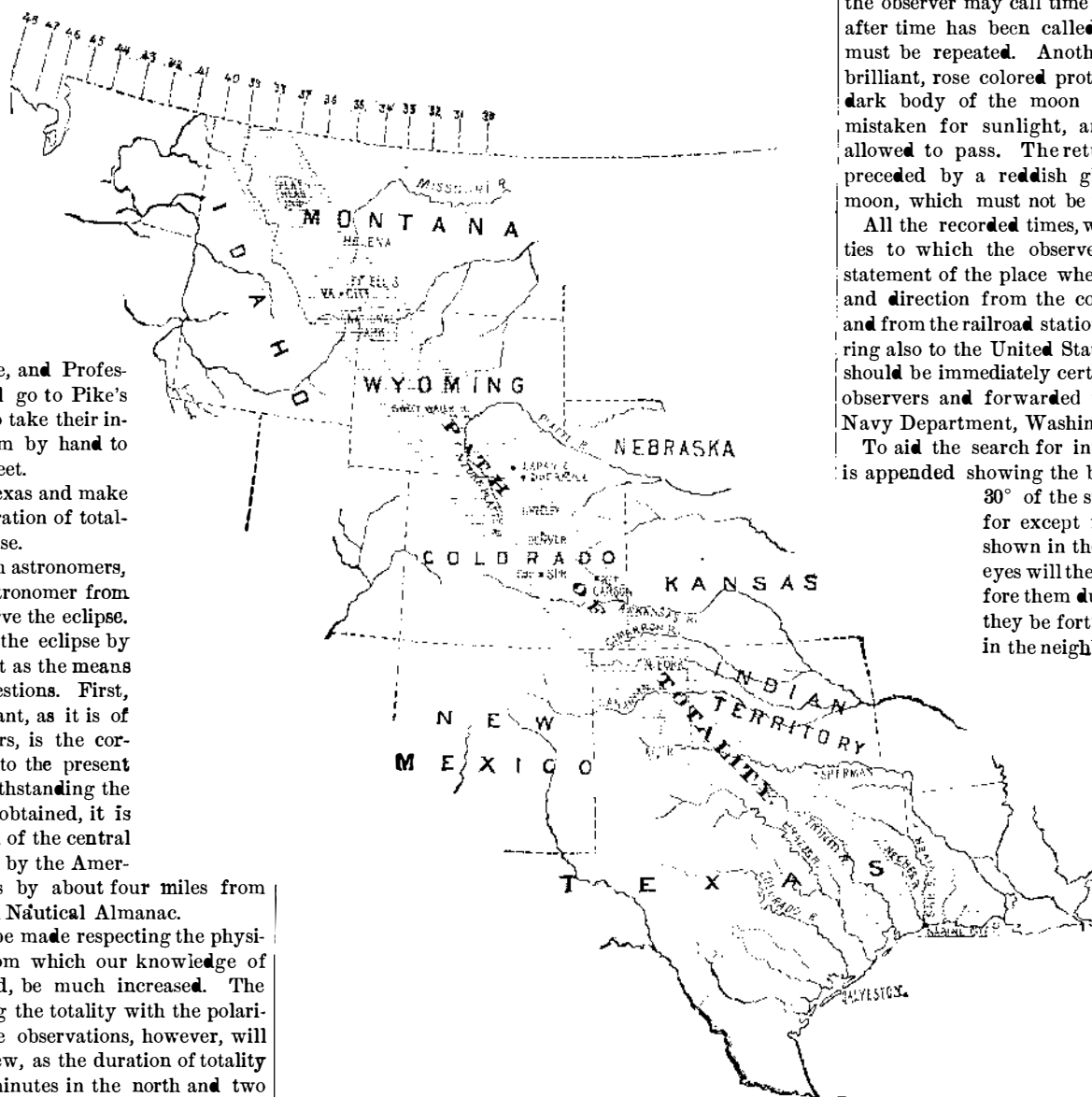
large photographs of the heavens will be taken, in order to allow the small planets, if any there be, to print themselves upon the photographic plate and thus announce to the world the fact of their existence and their influence upon the motions of Mercury. Should any of our astronomers be so fortunate as to discover any such body, his name will be heralded throughout the scientific world as ranking with Le Verrier, the discoverer of Neptune, and Hall, the discoverer of the satellites of Mars.



Situation of the Brighter Stars and Planets which may be seen during the Total Eclipse of July 29, 1878.—1. Mercury. 2. Regulus. 3. Mars. 4. The eclipsed sun. 5. Procyon (probably invisible in Texas). 6. Pollux. 7. Castor. 8. Venus (probably invisible in Texas). The sun, and the stars on the left hand side of the map, will be about an hour higher above the horizon in Wyoming than in Texas.

As such a favorable chance for the observation of the various phenomena attending upon a total eclipse can seldom be obtained, Admiral Rodgers and the authorities of the National Observatory wish to make the most of it, and have therefore issued a pamphlet requesting amateur astronomers and others that may be conveniently located to take such observations as may be in their power and forward the results obtained to the Observatory. From this we have condensed the following:

This eclipse may be regarded as a return of that of July



#### THE TOTAL ECLIPSE OF THE SUN, JULY 29, 1878.

18, 1860. The dark shadow of the moon will first strike the earth in Siberia, and crossing Behring Strait will strike the United States at the line separating Idaho from Montana Territory, will sweep over the western end of the latter, the Yellowstone National Park, diagonally through the center of Wyoming and Colorado, through the Indian Territory, and Northern and Eastern Texas, leaving the United States

where Louisiana and Texas join, as illustrated in the accompanying map—the two lines there shown indicating the extreme limits of totality, which will be about 116 miles wide. After leaving the United States the eclipse will pass over most of Cuba and Southern San Domingo. The eclipse will be visible, as a partial one, all over North America.

As previously stated, there is about four miles' difference in the path of the shadow as computed by the American and British Almanacs respectively. Inhabitants of towns near the edge of the shadow may furnish observations by which these limits may be accurately determined by simply noting how many seconds the sun is wholly obscured by the moon. These observations may be most conveniently made by a party of three persons, one being furnished with a watch having a second hand, another with a common spyglass and a piece of smoked glass, and a third with a pencil and note book, to record the time. A station should be selected where the party will be free from all interruption, either in the open air or at an open window. The spyglass should be lashed fast to some fixed object in such a position as to give an easy view of the sun, and some portion of the smoked glass should be very lightly discolored. The watch should have its minute hand carefully set to be on the minute mark when the second hand is on the 60s. It may also be advisable to cover the object glass of the spyglass with a cap having a hole three fourths of an inch in diameter cut in its center to lessen the brilliancy of the sun.

In making the observation, the holder of the watch should, as soon as the visible part of the sun is reduced to its narrowest crescent, begin counting the seconds aloud; the holder of the smoked glass (with or without the spyglass) will watch for the last ray of true sunlight, being careful to look through the brightest part of the glass that the eye will bear without inconvenience; and the third observer will look for the disappearance of the sunlight with the naked eye, and stand ready with pencil and paper to record the time. When the last ray of the sun has disappeared the observer with the glass will call time, and the exact minute and second must then be immediately recorded. The observers will then wait the return of sunlight, which will seem to burst out suddenly, and the minute and second of its appearance must be noted down with the same care as the time of disappearance. The difference of the two times gives the duration of totality.

In judging the beginning of totality there is danger of error if the smoked glass is very dark, because the sun's crescent may become so narrow as to be invisible through the glass several seconds before it is really all covered, and thus the observer may call time too soon. If darkness increases after time has been called, it was called too soon, and it must be repeated. Another danger is that the light of the brilliant, rose colored protuberances which surround the dark body of the moon during the total eclipse may be mistaken for sunlight, and thus the critical moment be allowed to pass. The return of the sunlight will also be preceded by a reddish glow on the border of the dark moon, which must not be taken for the sun.

All the recorded times, with an estimate of the uncertainties to which the observers think they were liable, and a statement of the place where made, giving distance in miles and direction from the courthouse if it be a county town, and from the railroad station if a railroad pass through, referring also to the United States land surveys if there are any, should be immediately certified by the signatures of all three observers and forwarded to the Nautical Almanac Office, Navy Department, Washington, D. C.

To aid the search for intra-mercurial planets, a diagram is appended showing the brightest planets and stars within 30° of the sun. No objects need be looked for except much nearer the sun than those shown in the diagram. Observers with keen eyes will therefore do well to have this map before them during the total eclipse, and should they be fortunate enough to see any objects in the neighborhood of the sun, indicate it by

pricking with a pin or pencil the exact spot where such objects appear relatively to those shown on the map. As there may be some difficulty in identifying the various objects, the map should be studied with the aid of the following items: Venus will be in the west about an hour and a half high in Colorado and Wyoming, and only about half an hour in Texas. Procyon will be a little lower than Venus, and further south may not be seen at all. Mercury, Mars, and Regulus will be from an hour and a half to two hours west of the meridian in Colorado and Wy-

oming, and two hours and a half west in Texas. In the former region they will be southwest from the zenith, and in the latter nearly west, being about one fourth or one third of the way from the zenith to the horizon in each place. Of the three, Mercury will be much the brightest, and may possibly be the only one visible.

Should a spectator observe any object nearer the sun than