the discoveries rest are conflicting among themselves, and if the probability of such discoveries is rendered small by long and careful series of independent observations, we are justified in waiting for further evidence before we accept the alleged discoveries as true. The ways in which an observer may be deceived are numerous. In 1878 an astronomer wrote me that he had discovered a satellite of Venus that revolved around the planet in thirty seconds. I expressed some doubt and advised him to examine his telescope and the eye pieces. He did so and was candid enough to inform me that the satellite he had discovered was nothing but a "ghost."

If any astronomer who is familar with astronomical observations and their discussion, will examine the reports on the Vulcans supposed to have been discovered during the eclipse of 1878, and will notice how the reports were changed from time to time, he will find good reasons for doubt. Certainly this matter is not to be settled by assertion. If there are Vulcans of the fourth and fifth magnitudes which attain an angular distance of from three to seven degrees from the sun, they ought to be found easily. A. HALL.

Washington, April 25, 1881.

THE SOLAR PARALLAX.

To the Editor of "SCIENCE":

From the American photographs of the Transit of Venus, as presented in part the first of "Observations of the Transit of Venus, December 8, 9, 1874, Made and Reduced Under the Direction of the Commission Created by Congress," I have obtained, for the value of the solar parallax, $8.883'' \pm 0.034''$ corresponding to a distance between the centres of the sun and the earth equal to 92,028,000 miles. D. P. TODD.

WASHINGTON, *April 26*, 1881.

ASTRONOMY.

MOUNT ETNA OBSESVATORY.—The *Memoirs* of the Italian Spectroscope Society contains an illustration of the Observatory of Mount Etna, showing that work upon the building has progressed as rapidly as could have been expected, when we consider the difficulties to be overcome in the transportation of materials, etc. Every effort is being made to finish the Observatory by 1882, and provide it with a director and staff both of astronomers and meteorologists. W. C. W.

Messrs. Houzeau and Lancaster, the Director and Librarian of the Bruxelles Observatory, are performing an extremely valuable service to astronomers by the preparation of a general bibliography of Astronomy. Two volumes have thus far appeared, the second of which is just published, and is devoted to memoirs which have appeared in scientific periodicals, and in the publications of the various academies. Four topics are included in this volume, Spherical Astronomy, Theoretical Astronomy, Celestial Mechanics, and Physical Astronomy. The only thing which even approximates the completeness of the present work, is the catalogue of the library of the Poulkova Observatory, a new edition of which has been in course of preparation for several years past. The Bruxelles work, however, has the advantage of being a general bibliography, and not limited to the contents of any one library, however extensive. O. S.

MICROSCOPICAL NOTES.

At our suggestion, Mr. Lockwood, of New York City, who has already devoted considerable attention to the application of Photography to the various branches of science, now proposes to make arrangements for photographing Microscopical Preparations.

The objects will be enlarged by very perfect and powerful objectives, and photographed while thus enlarged.

Those possessing microscopes will at once notice the great advantage to be secured by such an arrangement. Few possess the skill to produce a drawing from a microscopic object, while the amount of detail involved in sketching anatomical preparations, can be mastered by few who are not professed artists.

When Mr. Lockwood's arrangements are complete a microscopist, for a moderate amount, will be enabled to have a perfect copy of any microscopic preparation, and as many duplicate as he requires to circulate among specialists, or his friends. Should he desire to publish the result of his researches, Mr. Lockwood can then photograph the object directly on the wood block, ready for the hand of the engraver.

The chief value of the use of Photography in such a case lies in the fact that such drawings, being prepared by the hand of nature, their integrity cannot be impeached, and that any charge of exaggeration or error cannot be maintained.

When Mr. Lockwood's arrangements are complete we will announce the fact in our microscopical column, but in the interval would be glad to hear from those who are likely to avail themselves of these facilities for promoting microscopical research.

NOTES.

Les Mondes proposes to apply the photophone to the study of the *aurora borealis*.

ON THE GALVANIC POLARIZATION PRODUCED BY METALLIC DEPOSITS.—The polarization of copper, employed as negative electrode in a solution of sulphate of zinc, is never null, as Lipmann believes, in cases where the solution contains traces of a salt of copper, and that the deposit of zinc is exceedingly slight and invisible. On the contrary, it has a value which may differ much, and which is so much the greater the smaller the quantity of a copper-salt contained in the solution, and the less the time which has passed from the moment when the polarizing current was interrupted.—D. MACALUSO.

ON THE ELECTROMOTIVE FORCE OF VOLTAIC ARC.—When an electric flux is established between two conductors of the same nature by means of a gaseous medium, which is commonly the vapor thrown off by their substance, the inequality of temperature of those portions of the conductors which are contiguous to such a medium appears to be a general fact. It seems not less probable that the extremity by which the positive electricity arrives, possesses the higher temperature. This is observed in a remarkable degree in the production of the voltaic arc between two carbons, by means of a current of constant direction. The idea of ascribing to this phenomenon a thermo-electric origin is not novel. According to the application of the principle of the equivalence of heat to electric phenomena, an electromotive force acting in the inverse direction of the current, corresponds to a disengagement of heat at the point of junction of two heterogeneous substances.—M. F. P. LE ROUX.

MAGNETIC ACTION UPON THE FLUORESCENT LIGHT PRODUCED BY THE NEGATIVE DISCHARGE IN AN EXHAUSTED SPACE.—If we take a well-exhausted cylindrical tube, with rectilinear electrodes placed in its axis, the fluorescent light formed by the cathodic rays consists, as is well known, of a green cylinder bounded by a circle. This circle undergoes transpositions if a magnet is allowed to act upon the discharge. It can be shown that these, whether simple or complicated cases, may be explained by the following hypothesis:—The cathodic rays, emanating from the negative electrode, pass on in a straight direction, and the current moves from the anode to the sides of the cathodic space, and from thence to the negative electrode. The magnet acts upon these currents according to Ampère's rule.—K. DOMALIP.