

THE opening address for the Session 1894-95, delivered to the Royal Physical Society of Edinburgh by Prof. H. A. Nicholson, has recently been published in the *Proceedings* of that Society, and will be found to be an admirable summary of the evidence that has accumulated of late years against the doctrine of Ocean Permanence. The distribution of land and sea in former periods is discussed, and the truly abyssal characters of certain sediments now forming part of continental masses are pointed out in some detail, while mention is made of the evidence for a former Antarctic continent, and other matters are more briefly discussed.

A RECENT number of the *Annali* of the Meteorological and Geodynamic Office of Rome contains an interesting paper, by S. Arcidiacono, on the Syracuse earthquake of April 13, 1895. The disturbed area comprises the south-east corner of Sicily. On the map which accompanies the paper, eight isoseismal lines are drawn, corresponding to intensities 1 to 8 of the Rossi-Forel scale. These are elliptical in form, and have a common axis running from Cape Passero in a north-westerly direction through Vizzini, which is close to the centre of the meizoseismal curve. Applying the method of Dutton and Hayden, the depth of the seismic focus is estimated at about 7400 metres. The axis of the isoseismals coincides nearly with that of the ridge of Monte Lauro, and joins the two principal volcanic centres, now extinct, of the Val di Noto.

THE additions to the Zoological Society's Gardens during the past week include a Diana Monkey (*Cercopithecus diana*, ♂) from north of River Prah, Ashanti, presented by Captain Edgar E. Bernard; an American Tapir (*Tapirus americanus*, ♂) from Brazil, presented by Mr. Basil J. Freeland; a Markhor (*Capra megaceros*, ♂) from Peshawur, presented by Colonel Paterson; three Canarian Laurel Pigeons (*Columba laurivora*) from the island of Gomera, Canary Islands, presented by Mr. E. G. B. Meade-Waldo; a Common Mynah (*Acridotheres tristis*) from India, presented by Mrs. Sibyl E. Kennedy; a Herring Gull (*Larus argentatus*), British, presented by Dr. E. Goddard; two Grey Ichnuonms (*Herpestes griseus*) from India, deposited; two Amherst Pheasants (*Thaumalea amherstiae*, ♀♀) from Szechuan, China; two Swinhoe's Pheasants (*Euplocamus swinhoii*, ♂♀) from Formosa, a Bar-tailed Pheasant (*Phasianus reevesi*) from North China, two Great American Egrets (*Ardea egretta*) from America, a Porto Rico Pigeon (*Columba corensis*) from the West Indies, a Vinaceous Pigeon (*Columba vinacea*) from South America, two Rosy Parrakeets (*Palæornis rosa*, ♂♀) from Burmah, two Musky Lorikeets (*Trichoglossus concinnus*, ♂♀) from Australia, purchased; two Barbary Wild Sheep (*Ovis tragelaphus*, ♂♀), born in the Gardens.

OUR ASTRONOMICAL COLUMN.

THE FIFTH SATELLITE OF JUPITER.—The opposition of Jupiter in 1894 occurred at a very unfavourable time for observations at Mount Hamilton, but a few measures of the fifth satellite were secured with some difficulty by Prof. Barnard. During the observations of the satellite, the planet was obscured by a piece of smoked mica covering half the field. For the measurement of distances the micrometer wires were usually placed perpendicular to the belts on the planet; but on November 18 they were set parallel to the belts, and these measurements accordingly enable the Jovian latitude of the satellite to be determined. Only one eastern elongation was observed. This was on December 3, and the distance was found to be $59''.5$; or, reduced to the mean distance of the planet = 5.20 astronomical units, $48''.17$. On this date the elongation occurred at 23h. 43.6m. G.M.T., the corresponding time in Marth's ephemeris being 23h. 42m. G.M.T., so that the observed time was over a minute behind the computed time. The ephemeris is based on a period of 11h. 57m. 22.6s., and the observed elongation indicates that this period will represent the motion of

the satellite with sufficient accuracy to find it for several years to come (*Astronomical Journal*, No. 367).

THE YERKES OBSERVATORY.—Additional particulars as to the proposed equipment of the new Yerkes Observatory of the University of Chicago are furnished by Bulletin No. 1, the first of a series of notices which will be published at irregular intervals in the *Astrophysical Journal*. The resident staff is to consist of Messrs. Hale, Burnham, Barnard, Wadsworth, Ellerman, and Ritchey, the last-named as optician. The 40-inch object-glass has been completed by Mr. Alvan Clark, and recent tests have shown the definition to be fully equal to that of the Lick telescope, while the light-gathering power is considerably greater. Electro-motors are provided to give the various movements to the instrument and to the elevating floor. The attachments to the great telescope include a solar spectroscope, a spectroheliograph for photographing the solar chromosphere in monochromatic light, a stellar spectroscope, and a photoheliograph of long focus for photographing the direct image of the sun on a large scale. A 12-inch refractor and a 24-inch reflector will also be erected. The meridian-room is designed to contain a large meridian circle, but will be provisionally occupied by a transit instrument. An instrument shop and optical laboratory will be fully equipped with the necessary tools, and it is hoped that it will be possible to construct many of the instruments and laboratory apparatus which may be required in occasional investigations. The main building is now under roof, and will be completed during the summer.

THE PROPER MOTION OF τ TAURI.—A discussion of the meridian observations of τ Tauri, which has been undertaken by Dr. Fritz Cohen (*Ast. Nach.*, 3341), indicates a variable amount of proper motion in declination, but there is less certainty as to the motion in right ascension. For an explanation of the irregularities it is suggested that the star is attended by a dark companion similar to that associated with Procyon, and only giving evidence of its existence by its gravitational effects on the brighter star, causing it to describe an orbit round the common centre of gravity. It is true that the star is already known to be double, the magnitudes of the components being 4.5 and 8.5; but the distance of the visible companion is so great ($79''$), that the detection of an orbital movement in the comparatively short period covered by the meridian observations is scarcely probable. There is an increase of $11''$ in the distance measured in 1823 as compared with that determined in 1783, but as the distance and position angle in 1823 agree substantially with those in 1895, the earliest recorded measure is not to be depended upon. An investigation of the movements of the star by means of micrometric measurements in relation to neighbouring stars is suggested. The association of dark bodies with bright stars, in some cases producing variability either by eclipses or other means, but in others having no appreciable effect on the brightness, is a very notable feature of recent astronomical discoveries.

TWO REMARKABLE SOLAR PROMINENCES.—Father Fenyl reports the observation of two very striking solar prominences (*Astrophysical Journal*, vol. iii. p. 192). One observed on July 15 last was remarkable for its enormous velocity of 858 km. per second in the line of sight; the other, on September 30, for its great height of $11' 28''$, which it attained with a mean velocity of 448 km. per second.

The first one was found precisely at a point on the sun's limb where a group of sun-spots was passing out of view, and its form changed with extraordinary rapidity.

The second prominence was unusually bright, and at 10 a.m. was about $1'$ high; eleven minutes later it had mounted to $4'$, and the maximum altitude of $11' 28''$ was reached at 10.20, the velocity in the line of sight then being 746 km. per second. Half an hour from the beginning, the prominence was only $3' 16''$ above the photosphere. The spot associated with the latter prominence showed a considerable proper motion in the earlier days of its existence, amounting to about 600 km. per hour. The convergence of some of the brighter "stream lines" of the prominences towards a spot was especially marked in these observations, and it is suggested that they have a radial arrangement with respect to the spots. This structure seems to point to the existence of currents in the solar atmosphere, directed either towards the interior of a spot, or outwards from it.

It is stated that an explosion taking place over a sun-spot would accord well with the appearances usually seen in the great prominences which have been observed at Kalocsa, but it is by no means asserted that actual explosions take place.