being given to forestry, and because the Society is making efforts to increase its membership by going further afield. The *Transactions* of the Society, of which we have received a recent issue (vol. iii part iv.), should materially assist towards this end; for the instructive papers contained therein appeal to all foresters. In the Part received by us, there is an essay on "How Trees Grow," by Mr. J. Maughan; an essay on "Thinning Mixed Plantations," by Mr. W. Forbes; and a paper on "The Distribution of Trees in a Wood," by Prof. W. Somerville. These are all useful contributions, but even more important is the publication of the results of an inquiry, conducted by the Society, into the disease of the Larch, a subject about which much has been written and said. The information which Prof. Somerville has brought together, forms a valuable summary of the present position of knowledge in regard to the Larch disease, and shows the various conditions and cultural methods which hold out some prospect of securing comparative immunity from attack. With a larger membership, the Society would be able to carry out, and publish, the results of many similar investigations.

PROF. SCHIFF and Dr. Tarugi describe, in a communication to the *Berichte*, an admirable substitute for the disagreeable sulphuretted hydrogen in qualitative analysis. The new reagent is the ammonium salt of thio-acetic acid, $CH_3 . COSNH_4$. Ammonium thio-acetate is decomposed by hot dilute hydrochloric acid, liberating sulphuretted hydrogen without any precipitation of sulphur. No objectionable bye-products are formed in the reaction, only sal-ammoniac and acetic acid being produced. When a feebly ammoniacal solution of ammonium thio-acetate is added to a hydrochloric acid solution of the metals of the second group, and the liquid is heated to near boiling, the metals are at once precipitated as sulphides, while only the faintest odour of sulphuretted hydrogen is perceptible. After cooling and filtering, the filtrate is found to contain no trace of the metals, not even of arsenic if an arseniate had been originally present. The completeness and rapidity of the reaction, particularly in the case of arsenic, which is usually so troublesome to precipitate from arseniates, is one of its strongest recommendations, and is described by Prof. Schiff as being perfectly surprising. A couple of cubic centimetres of a 30 per cent. solution of ammonium thio-acetate is usually ample for a gram of the substance to be analysed. The reagent has been employed for some time by Prof. Schiff in the Pisa laboratory, and is much appreciated by his students, sulphuretted hydrogen being completely excluded from the laboratory, doubtless to the material advantage of all concerned, both as regards comfort and health. Thio-acetic acid is readily prepared by acting upon glacial acetic acid with phosphorus pentasulphide. It boils at 95°, and is but slightly soluble in water. When the acid is dissolved in a slight excess of dilute ammonia, a yellow solution is obtained, which is then diluted to three times the volume of the acid originally taken—that is, 10 cubic centimetres of the acid furnish 30 cubic centimetres of the reagent. Prof. Schiff serves the reagent out to his students in small bottles closed by a cork, through which a small pipette, holding 2 cubic centimetres, is inserted, by means of which the convenient quantity of the reagent can at once be added to the hydrochloric solution of their test substance. It is scarcely necessary to add that zinc, manganese, nickel, and cobalt are not precipitated in the presence of hydrochloric acid by the new reagent, any more than by sulphuretted hydrogen itself. The sulphides of these metals are at once precipitated, however, upon rendering the solution alkaline; but as ammonium sulphide acts quite as well for this purpose, Prof. Schiff confines the use of ammonium thio-acetate to the precipitation of the metals of the second group.

THE additions to the Zoological Society's Gardens during the past week include a Lion (*Felis leo*, ♂) from India, presented by H.R.H. the Duke of Connaught; a Cape Bucephalus (*Bucephalus capensis*) from South Africa, presented by Mr. J. E. Matcham.

OUR ASTRONOMICAL COLUMN.

THE MASS OF THE ASTEROIDS.—A preliminary note on the probable mass of the asteroids was contributed by Mr. B. M. Roszel to the *Johns Hopkins University Circular* in May 1894, and summarised in these columns (NATURE, vol. l. p. 87.) In that paper Mr. Roszel limited himself to determining the mass from a study of 216 minor planets; he has now extended the computations to 311 asteroids, the orbits of which are given in the *Berliner Astronomisches Jahrbuch* for 1894 (*University Circular*, January 1895). His chief object was to find a probable limiting value for the mass, rather than an accurate determination of the mass itself. Using the photometric determinations of the diameter of Vesta, by Pickering and Müller, and the direct measures of the diameters of Ceres, Pallas, and Vesta by Barnard, Mr. Roszel has reduced the volumes of all the asteroids to the volume of Vesta, except when Barnard's measures were the basis, in which case he computed the volumes of Ceres and Pallas separately, and added them to the combined volume of the remaining 309. Assuming the albedo constant and a constant density equal to the density of Mars, he obtained the following numbers:

Combined volume of 311 asteroids .	5·185 vol. of Vesta.
,, ,, omitting Ceres and Pallas. . .	2·684 ,, ,,
Volume of Vesta, in terms of volume of Mars:	
(1) From Pickering's estimate of the diameter of Vesta, assuming the albedo = albedo of Mars	= 0·00022
(2) From Müller's estimate, assuming (*a*) the albedo = albedo of Mars	= 0·00065
(3) From Müller's estimate, assuming (*b*) the albedo = albedo of Mercury	= 0·00129
(4) From Barnard's estimate of the diameter of Vesta	= 0·00018
Combined mass of 311 asteroids, in terms of mass of Mars:	
From Pickering's estimate, as above . .	= 0·00112
,, Müller's estimate, as above (*a*) . .	= 0·00336
,, ,, ,, ,, (*b*) . .	= 0·00666
,, Barnard's measures	= 0·00273

The mean diameter of Mars was taken as 4230 miles. It appears from the above numbers that the combined mass of the asteroids is about ·026 of the mass of the moon.

THE APPARENT DIAMETERS OF MERCURY.—During the transits of Mercury on May 9, 1891, and November 10, 1894, Prof. Barnard gave special attention to measurements of the planet's apparent diameter. (*Ast. Jour.* No. 335.) In both cases the diameter in R.A. was found to be slightly greater than that in declination, and if this be not a mere accidental coincidence, as Prof. Barnard seems rather inclined to believe, it would indicate a small polar compression. The measures at the two transits respectively indicate a polar compression of 1/134 and 1/98, or a mean of 1/116. Though by no means insisting on the reality of the difference in the diameters, Prof. Barnard points out that "the results may be of great importance in the future, as bearing upon the rotation of the planet on its axis in a reasonably short period." Expressed in angular measure, reduced to unit distance, the two diameters as measured in 1894 were 6″·241 for the "equatorial," and 6″·178 for the "polar" diameter. It is incidentally mentioned that "though Mercury cannot be seen at transits with the naked eye alone, it only requires a power of 2¼ diameters to make it easily visible."

THE VARIATION OF LATITUDE.—The results obtained by Mr. Chandler in his investigations of variation of latitude seem to be confirmed by M. Ivanof's recent discussion of the older series of observations made with the great vertical circle at Pulkowa. (*Ast. Jour.* No. 335). "There is no doubt that two periods subsist; one equal to 428 days, the other to a year. Also, the semi-amplitudes of both terms are variable beyond any doubt."