

WE have received the report for the past year of the School of Mines, Ballarat, an institution which its Council believe is in a fair way of becoming the leading School of Science in the colony of Victoria. The increasing number of the students who avail themselves of the constantly extending opportunities for instruction offered by the School renders additional teaching power a necessity, and this requires, first of all, an increased income. It is to be hoped that the Council have been successful in its request for double the present annual subsidy from the Government. A School of Mines is perhaps the most immediately useful and paying one a young community can have. A new and enlarged museum has been added to the School, and Mr. Oddie, the Vice-President, has undertaken at his own expense to erect and equip an astronomical observatory. Two rooms, each 16 feet by 18, were erected when the report was drafted, and in one of these a 12½-inch Newtonian reflector has been placed in position. The second room is to be utilised for spectrum analysis, solar physics, testing specula, &c. A system of meteorological observations with the latest instruments, in connection with the Melbourne Observatory, has also been introduced. A recent task of the School authorities, in which many of our readers may be presumed to be interested, is the collection of rocks and minerals representing the geology of Western Victoria in the Colonial and Indian Exhibition. At the close of the Exhibition it will be presented to the Museum of the Geological Survey of Great Britain. The reports of the individual professors show progress in almost every direction—in the number of students, of subjects taught, and of average attendances of each student. We observe that the benefits of the School are largely extended by means of a concession from the Government railways permitting students to travel over long distances at exceedingly low fares. This is one of those concessions which cost so little, yet are worth so much, and which are more common in the United States or the colonies than they are in England.

IN a very interesting paper contributed to the *Bulletin* of the Essex Institute of Salem, Mr. A. McFarland Davis writes on some of the games of the Indian tribes of North America. Several of these are described at considerable length, mostly from the early Jesuit records. Lacrosse is the first and most important of these; it was, as it is now, purely a game of skill, but it was a contest of grave importance, not a mere pastime, and was domesticated over a wide extent of territory. Another very widely-spread game was "platter," which was played with dice, and was wholly a game of chance; the third was a game of chance and skill combined, and in some of its forms was exceedingly complicated. It was called "straws," because a bundle of straws was divided, the game turning on the odd or even numbers in the heaps. It resembles the celebrated Chinese game of *fantan*, which forms one of the principal sources of revenue of one European colony in the East. Sundry other games not so widely spread as these are also described by Mr. Davis. The extraordinary importance attached to these games, the strange and solemn ceremonies with which they were frequently initiated, give them an interest in the eyes of anthropologists beyond that of mere curiosity.

THE additions to the Zoological Society's Gardens during the past week include a Rhesus Monkey (*Macacus rhesus*) from India, presented by Mrs. Faulkner; two Golden Eagles (*Aquila chrysaetos*) from the Isle of Mull, Argyllshire, Scotland, presented by His Grace the Duke of Argyll, K.G., F.Z.S.; a Stock Dove (*Columba ænas*), British, presented by Mr. Charles Whymp, F.Z.S.; an Anaconda (*Eunectes murinus*) from South America, deposited; a Lesser White-nosed Monkey (*Cercocebus petaurista*) from West Africa, purchased; a Maned Goose (*Bernicla jubata*) from Australia, received in exchange; a Spotted Hyæna (*Hyæna crocuta*), born in the Gardens.

OUR ASTRONOMICAL COLUMN

STELLAR PHOTOMETRY.—Mr. Chandler, of Cambridge, U.S., presented an interesting and important paper to the Section of Mathematics and Astronomy of the American Association at the recent meeting, the title being "A Comparative Estimate of Methods and Results in Stellar Photometry." According to the account of the paper given in *Science* (vol. viii., No. 187), Mr. Chandler took for his text the general statement that instrumental photometry had thus far proved a failure; that is, it had not developed a more uniform scale than Argelander's, nor had the accuracy of individual determinations been increased, but they were, on the contrary, far more uncertain than the old differential naked-eye estimates. In support of his views Mr. Chandler showed that, for stars of Argelander's scale between magnitudes 2 and 6, the photometric catalogues of Seidel, Peirce, Wolf, Pickering, and Pritchard differed among themselves as much in their measures of what Argelander called a difference of one magnitude, as they did in their measures of his successive magnitudes. Their average values of the logarithm of the light-ratio for one of Argelander's magnitudes between 2 and 6, ranged between '30 and '38, about '35 for the mean of all the above-mentioned catalogues. Between magnitudes 6 and 9 of Argelander's scale, the catalogues of Rosén and Ceraski averaged about '35 for the light-ratio, while Pickering's late results with the meridian photometer gave (between magnitudes 6 and 8.5) '48 instead of '35 for this ratio. Coming to accidental errors, Mr. Chandler showed that, from a discussion of the naked-eye estimates of Gould, Sawyer, and himself, the probable error of a single estimate was a little over $\pm .06$ of a magnitude when the stars were at considerable distances from each other, and about $\pm .05$ of a magnitude when near; while the probable error of a single measure in the "Harvard Photometry" was $\pm .17$ of a magnitude, and in the "Uranometria Oxoniensis" about $\pm .10$ of a magnitude. The large residuals in the "Harvard Photometry" appear to arise, according to Mr. Chandler, from the wrong identification of stars in many cases, one instance being cited where no bright star exists in or near the place given in the observing-list, on account of a misprint in the *Durchmusterung*, and yet some neighbouring star was observed on several nights for it. The author, in conclusion, pointed out that we must obtain better results from photometers if we ever expect to use their results for the detection or measurement of variable stars, since several variables have been detected, and their periods and light curves well determined by eye-estimates, whose whole range of variation is no greater than the whole range of error in the photometric observations upon a single star with the meridian photometer.

A NEW OBSERVATORY IN LA PLATA.—In the *Bulletin Astronomique*, tome iii. Août 1886, M. Mouchez gives an account of a new Observatory which is being built in the town of La Plata. The Observatory appears to have a remarkably good instrumental equipment, including a telescope of 0.80m. aperture, an "équatorial coudé" of 0.43m. aperture, a meridian instrument of 0.22m. aperture, an apparatus for celestial photography of the same dimensions as that of MM. Henry at the Paris Observatory, a Thollon spectroscope with objective of 0.25m. aperture, besides a collection of geodetic instruments. The new Observatory is under the direction of M. Beuf, lately an officer in the French Navy, and his first efforts are to be directed towards the carrying out of a geodetic survey of the vast territory of the province, including the measurement of an extensive meridian arc in the plains of Chaco and Patagonia. The measurement of this arc will supply a want which has been long felt by geodesists, and will give new and valuable data for an increase in our knowledge of the terrestrial spheroid. He trusts that M. Beuf will be successful in this arduous and important undertaking, and also that he will have sufficient energy, and be supplied with a sufficient staff of observers, to work to advantage the numerous and powerful instruments which the Observatory possesses.

HELIOMETRIC OBSERVATIONS OF THE PLEIADES.—In the note on this subject, printed in last week's "Astronomical Column," the words "since 1860" should read "since 1840," the latter being the date of Bessel's determinations resulting from his observations with the Königsberg heliometer made during the years 1829-41.