

features before his eyes, by constructing the orthogonal projection of such features, graphically, in a simple manner, from their perspective views.

J. A. FLEMER.

WASHINGTON, D. C.

THE METEOROLOGICAL AND MAGNETICAL OBSERVATORY ZI-KA-WEI, NEAR SHANGHAI, CHINA.

THE Zi-ka-wei Observatory, founded in 1873 by the French Roman Catholic Mission of Kiang-nan, has been provided by the same with all the instruments necessary for the study of meteorology and terrestrial magnetism, and from that time it has not ceased to pursue actively the study of those two branches of science. The work of the Observatory comprises 3 parts :

(1) The first part is a public service accepted out of good will ; and it may be said gratuitously, in behalf of the port of Shanghai. This manifold service includes : the service of the time-ball by which the exact time is given to the port of Shanghai by the fall of a meridian ball ; a daily bulletin, posted up at Shanghai, contains information on the weather at Shanghai and along the coast of China ; the typhoon and storm warnings by means of signals hoisted up at a semaphore. (2) The second part of our work is composed of hourly meteorological and magnetical observations published in monthly bulletins, which make at the end of each year a volume in.-4to of over 200 pages. (3) The third part comprises special studies on meteorological or magnetical subjects, the whole of which comprises already 26 memoirs.

But up to the present the study of astronomy has been altogether left aside. When the service of the time-ball was inaugurated at Shanghai, twelve years ago, by the care of the Municipal Council of the French Settlement, the Observatory received, at the expenses of that Council, a little transit in-

strument, good for the determination of the time, but altogether inadequate to astronomical observations properly so called. This absence of instruments fit for astronomical studies we have seen it regretted by many learned men. To quote but one only, Mr. A. Tissandier, relating in *La Nature* No. 944 his visit to the Zi-ka-wei Observatory, expressed his regret of seeing us neglecting astronomy. Our too limited staff had prevented us till now, just as much as the lack of pecuniary means, to think seriously about giving to our Observatory a so-eagerly-longed-for development. At present we would be in a better condition even to undertake a series of studies in that so interesting branch of science. But it is quite impossible that the Catholic Mission, which has made so many expenses to found the Observatory and maintain it in its present state, make to itself the expenses for such an establishment. It is even impossible that it can suffice for the cost of the instrument which we wish to set up in the first place, *i. e.*, an equatorial telescope of becoming size. We must then necessarily have recourse to the generosity of those interested in the advance of science and particularly in the studies made at Zi-ka-wei. The city of Shanghai profiting above all by our work, it was then quite natural that we first of all address ourselves to it. And that we have done in demanding from the two Settlements (English and French) to be so kind as to contribute each for a sum of £400 to the setting up of an equatorial telescope at the Zi-ka-wei Observatory. That proposal, brought before the meeting of the Ratepayers of the English Settlement on the 12th March by Mr. G. J. Morrison and seconded by Mr. J. Henningsen, has been received with the marks of the greatest sympathy and voted unanimously.

A similiar reception of my demand has been made at the meeting of the French

Municipal Council on the 1st of April, and the Council granted likewise a sum of £400 to the Observatory for the same end. Besides, the shipping companies established at Shanghai have promised to subscribe for the same purpose a sum, the amount of which their agents have not been able to fix immediately, but the sum total may, perhaps, be equivalent to £400. But this sum of £1,200 will be very little for an equatorial telescope of convenient size, for instance of an aperture of 20 inches; very little especially for a complete astronomical observatory.

I have made up my mind to address myself to all those to whom the Lord has distributed, together with fortune, the love of science and the desire of utilizing for its advance the fortune they possess. It is to them to whom I make application, begging them to be so kind as to contribute, according to the pecuniary means they may dispose of, to that development of the Zi-ka-wei Observatory. I am aware that to solicit thus of the public a subscription in favor of a private institution, it would be necessary to be able to present simultaneously titles to the benevolence and guarantees that the solicited money will be usefully employed for the proposed end. But the Zi-ka-wei Observatory can present, I believe, both. Its titles to the benevolence it is its past, and its work of which I have spoken about above; titles which, as it has been seen, are far from being denied by the community of Shanghai. The said work constitutes also, I presume, the best guarantee that the asked-for money will be usefully employed. My claim, being founded on these considerations, I dare hope that my request will be received kindly and that numerous benefactors will be willing to help us to succeed in this useful undertaking.

STANISLAS CHEVALIER S. J.

*Director of the Observatory.*

ZI-KA-WEI, near Shanghai, 8 April, 1895.

SCIENTIFIC LITERATURE.

*The Royal Natural History.* Edited by RICHARD LYDEKKER. Vol. III., pp 596. Royal 8°. 1894-1895; Frederick Warne & Co., London and New York.

Volume III. of this important work has just reached America. The first half is devoted to Mammals; the second to Birds. The groups of Mammals treated are the Cetaceans, Rodents, Edentates, Marsupials and Monotremes, thus concluding the class. One hundred and thirty-six pages are given to the Rodentia—the most difficult order of all. That this chapter is the best popular account of the group yet written goes without saying, though in numerous details it is sadly behind the present state of knowledge, particularly with reference to American forms.

In describing the molar teeth of rodents the author forgot the *Geomyidae* and *Aplodontia* when he said: 'permanently-growing rootless molars *always* have complex crowns.' But he made a happy comparison, and one easily remembered, respecting the parallelism between the molar teeth of rodents and of the mastodons and elephants, "the molar tooth of a mouse, which has distinct roots and a low crown with simple cusps, being exactly comparable to that of a mastodon; whereas the high crowned laminated and rootless molar of a guinea pig corresponds as closely with that of a modern elephant."

In describing the coloration of the group as a whole he says that no rodent has 'the tail ornamented with alternate light and dark rings,' forgetting the handsome Mexican ring-tailed ground squirrel (*Spermophilus annulatus*) described by Audubon and Bachman half a century ago.

His ideas of the American chipmunks are hopelessly mixed. He says that southern specimens of the common eastern *Tamias striatus* are 'lighter in color than those from the north.' The reverse is the case. In the same paragraph a California species is