Prof. Barrett's, that the effect of longitudinally magnetising a bar of iron, or of increasing its magnetisation, is to increase its dimensions longitudinally and to diminish them laterally, so that the volume remains constant; and on the other hand, from Sir William Thomson's investigations, that the effect of increase of longitudinal dimensions in an iron bar is to increase, and of increase of transverse dimensions to diminish its longitudinal magnetisation.

This analogy holds also with reference to steel and nickel. In the case of bars of these metals, we found their longitudinal magnetisation to be diminished by the application of longitudinal pull, and Prof. Barrett has found that bars of the same metals undergo a shortening when their longitudinal magnetisation is increased.

In the case of cobalt, however, the results do not agree. The results for cobalt, given in Sir W. Thomson's paper, are somewhat anomalous, but they refer only to the effect of stress on magnetism in a bar which had been previously magnetised and then placed while being experimented on, under the influence of the earth's vertical force The results were therefore complicated by the effects of the stress on the residual magnetism. So far as these results go they bear out to some extent those found by Prof. Barrett, but further experiments, the results of which have not yet been published, prove that the effects of stress are the same as for nickel. This is the case at least for all but low magnetising forces.

The behaviour of cobalt and nickel throughout a wide range of magnetising forces, and under the influence of both transverse and longitudinal stress, will, it is hoped, be fully investigated in a continuation of Sir William Thomson's experiments, begun some time ago, and temporarily interrupted by other, and for the time being, more pressing work, but now about to be resumed.

I may mention that my brother and myself pointed out in NATURE, vol. xviii. p. 329, the applicability of a modification of Edison's Tasimeter to the measurement of the changes of dimensions produced in a body by magnetisation. We still think that this is perhaps the most simple method, and we have found it very sensitive for qualitative results. In our trials of it we have experienced some difficulty in obtaining a carbon button which would return after having been subjected to stress to the same resistance as before. The experiments of Prof. Mendenhall, however, show that the kind of carbon used by Edison in his Tasimeter possesses this property in perfection; and we hope soon by the use of this carbon to obtain quantitative results.

ANDREW GRAY

The Physical Laboratory, the University, Glasgow, October 19

Aurora

AN aurora was seen at Croydon at about 7 p.m. on Wednesday, the 18th inst. Three streamers of a whitish colour could be traced distinctly across the whole of the sky while the moon was still up.

A. E. EATON

The Victoria Hall Science Lectures

THE popular science lectures at the Victoria Hall have proved quite sufficiently successful, so far, to make the managers wish to continue them, provided that the kindness of competent lecturers makes it possible to do so. There have been audiences each night of about 600—small compared with what the building will hold, but not amiss for a Friday night, in a neighbourhood where (except on Saturdays) people think twice before spending a penny. Those who have been present, agree in describing the audience as a peculiar one, for whom greater simplicity is needed than for the audiences of mechanics' institutes, and the frequenters of penny science lectures in general. They are quite ready to attend and to be interested, and do not think an hour too long, provided the ball is kept constantly moving, but as to this they are very exacting, and any breakdown of the apparatus, however temporary, places the success of the lecture in serious danger. There are stamps and whistles of impatience at any pause, such as must occur in adjusting experiments, but these cease the moment the lecture proper proceeds. This impatience perhaps makes the sustained interest of a lantern more suited to the audience than the more varied but intermittent experiments.

It is to be wished these lectures could be more widely known among the artisan class, who have not too many opportunities of hearing sound popular science.

ONE OF THE COMMITTEE

Royal Victoria Coffee Hall, Waterloo Road, S.E., October

THE TYPHOONS OF THE CHINESE SEAS[1]

THIS work by the learned director of the Zi-Ka-Wei Observatory, consisting of 171 pages quarto, and eight illustrative plates giving the tracks of the twenty typhoons of 1881, may be regarded as the outcome of the recent establishment of meteorological stations over the regions swept by the typhoon. The typhoons of 1880, amounting to fourteen, were described by Father Dechevrens in a previous paper. These two papers, from the greater fulness and accuracy of their details, form a contribution of considerable importance to the literature of cyclones.

An examination of the tracks of these thirty-four typhoons shows that they generally have their origin in the zone comprised between the parallels of 10° and 17°, some of them originating in the Archipelago of the Philippines, but the greater number to the eastward of these islands in the Pacific. The first part of their course is westerly and north-westerly; they then recurve about the latitude of Shanghai, and thence follow a north-easterly course over Japan. During the first half of their course the barometric gradients are steepest, and the destructive energy of typhoons is most fully developed; but after advancing on the continent, and, particularly after recurving to eastward, they rapidly increase in extent, form gradients less steep, and ultimately assume the ordinary form of the cyclones of North-Western Europe. In illustration of the steepness of the gradients sometimes formed, it is stated that on July 15 a gradient occurred of 2·760 inches per 100 miles, or one inch to 36 miles.

Typhoons do not occur during the prevalence of the north-east monsoon from November to May. In 1881 the typhoon season extended from May 22 to November 29. In Japan the true typhoon season is restricted to August and September, the storms there during the other months resembling rather the ordinary cyclones of temperate regions. The tracks of the typhoons during the months of moderate temperature, May, June, the latter half of September, October, and November, are the most southerly; they lie flattest on the parallels of latitude, and present a great concavity looking eastward; but those of the warmer months, July, August, and the beginning of September, exhibit, on the other hand, very open curves. This seasonal difference in the form of the tracks, taken in connection with the general form of the recurving tracks of the West Indian hurricanes, which are less open than those of the Chinese seas, suggests a possible connection between the forms of these curves and the different distributions of atmospheric pressure prevailing over the continents at the time.

Of the new facts brought forward in this report, the most important perhaps are those which show that the typhoon tracks have the feature of recurvation as distinctly as the hurricanes of the West Indies and the Indian Ocean. The degree of recurvation and the relative frequency with which it occurs in the tracks of the cyclones of the Chinese seas, the West Indies, the Indian Ocean near Madagascar, and the Bay of Bengal respectively, are important features in the history of these storms, which such reports will do much to elucidate. We shall look forward with the liveliest interest to Father Dechevrens' future reports, which from the lines of inquiry already indicated may be expected to throw considerable light on the influence of extensive regions of dry air and of moist air respectively, and of elevated

[1] "The Typhoons of the Chinese Seas in the Year 1881." By Marc Dechevrens, S.J., Director of the Zi-Ka-Wei Observatory, China. (Shanghai: Kelly and Walsh, 1882.)