Scott, Professor Ray Lankester of University college (London) and Professor Jeffrey Bell of Kings college, Dr. Spencer Cobbold, Mr. Romyn Hitchcock of New York, Mr. R. E. Earll of Washington, Dr. Hubrecht of Utrecht, Professor Smitt, Professor Torell and Dr. Trybom of Sweden, Dr. W. A. Buch of Norway, Professor Giglioli of Florence, Dr. Steindachner of Vienna, and Mr. E. P. Ramsay of the Sydney museum (New South Wales), — are all here in the work. Just before the opening of the exhibition, *Nature*, in an editorial, after stating that the management of affairs had been trusted almost entirely to 'practical' men, to the exclusion of English men of science, expressed some doubt as to whether this policy would effect as satisfactory results as that of the Berlin exhibition. It would be interesting to know how far this hint has influenced the action of the executive committee. The committee has shown itself singularly sensitive to the voices of well-meaning advisers, and changes are constantly being made for the better in the management of affairs. For instance: the conference chamber has been removed from the conservatory, where it was torture either to speak or to listen, to one of the picture-galleries near the main entrance; and the experimental fish-market in connection with the exhibition has been thrown open to the public without admission-fees, and a separate entrance cut through from Exhibition road.

The papers read at the conferences are being printed in full, together with the discussions which follow them, and will form a valuable little library, when supplemented by the shilling handbooks to the exhibition, which are being rapidly printed. Fifteen of these handbooks are announced, in addition to the eighteen or more 'papers of the conferences.' The literature of the exhibition is reserved for future discussion. It is much to be hoped that the authorities will crown the series with an illustrated report, prepared by scientific committees, similar to the valuable 'Amtliche berichte über die Internationale fischereiausstellung zu Berlin.'

The closing address at the conference by Professor Ray Lankester will be upon 'The scientific results of the exhibition.' It would not be surprising if Professor Lankester were to choose to act the part of the prophet rather than that of the recorder, and to point out in his discourse what the exhibition ought to do for science. A number of prominent educators and investigators have already addressed to the executive committee a memorial advocating the establishment of a national marine zoölogical station with a part of the surplus funds, which, from present appearances, are likely to remain over at the end of the exhibition. In another letter I hope to review briefly the most important features of the exhibits of the several countries. G. BROWN GOODE.

Richmond Hill, July 10.

THE PARIS OBSERVATORY.

WE abstract from *Nature* the items of chief interest in the report of Admiral Mouchez, the director of the Paris observatory, on the state of that institution during the past year. Its service has been considerably deranged by the preparations for the transit of Venus. The various members of the expedition attended the observatory to be trained either in photography or in the use of the artificial transit, and no less than five of the *personnel* of the observatory themselves took part in the work. The grounds of the observatory have been extended, the equatorial *coudé* has been installed, and several underground chambers have been constructed for the purpose of studying magnetism and terrestrial physics generally. A revision of Lalande's catalogue of stars, numbering forty thousand, has been going on for the past four years. The general catalogue, which will form eight volumes in quarto, is well in hand; and four volumes will be published during the next three years. Meridian observations, numbering a hundred and ten thousand, have already been made, to assist in the construction of the catalogue.

The common inconveniences attending the use of equatorials of the usual form of construction have led M. Loewy to conceive the idea of adapting to the equatorial the system of '*lunette brisée*,' employed first in England, and afterward to a greater extent in Germany, especially in small transit instruments. The new *coudé* equatorial may be thus described: the polar axis of the instrument is supported at its extremities on two pillars, like a meridian instrument; round this axis the telescope turns, forming a right angle at the lower support; by means of a mirror placed at the summit of this angle, the light is reflected along the pierced axis, at the end of which the eye-piece, or micrometer, is placed. Under these conditions, with the telescope at rest, objects on the celestial equator pass across the observer's field of view. In order to secure the observation of objects not on the equator, a mirror free to rotate is placed before the object-glass, and connected with the declination-circle. The inclination of this mirror may be changed so as to throw into the tube the light coming from a star of any declination. The observer may thus explore every part of the heavens without quitting his position at one end of the polar axis. The telescope may practically, by a rotation of this axis, be directed toward any part of the celestial equator, whilst a star of any declination may be made to throw its light down the broken telescope by means of the external mirror. Preliminary ex-

periments have shown that this double reflection does not occasion a great loss of light; and the figure and polish of the silver on glass mirrors are very satisfactory. The observatory possesses this new instrument through the liberality of the well-known patron of French astronomy, M. Bischoffsheim.

In regard to physical observations, M. Egoroff, professor of physics at Warsaw, was occupied at Paris during the months of July and August, as in preceding years, with the spectroscopic study of atmospheric absorption, working with a beam of electric light sent from Mont Valérien to the observatory. In consequence of the decision of Admiral Mouchez to separate special meteorological investigations from the astronomical work of the observatory, meteorological observations of a much higher value are now being made, with the special object of determining the different corrections, of the nature of refraction, to be applied to the astronomical observations. A series of observations is to be made from a captive balloon of such size, that, with ordinary gas, it can, in calm weather, take self-registering barometers, thermometers, and hygrometers up to a height of five hundred, and with pure hydrogen to a height of eight hundred metres. The balloon cannot be well managed if the velocity of the wind exceeds four or five metres per second; but this is not regarded as inconvenient, because it is during complete calm that the greatest abnormal perturbations of astronomical refraction manifest themselves. Simultaneous observations will be made on the meridian of the Paris observatory, north at the observatory of Montmartre, and south at the observatory of Montsouris.

The construction of the great refractor of 16 m. focus, together with its dome 20 m. in diameter, is steadily progressing. The object-glass figured by M. Martin is already complete. The dome is to be of the same dimensions as the Pantheon, and the largest ever attempted. The arrangement for insuring its turning with ease, and which has been adopted for its construction, is that proposed by M. Eiffel. In order to reduce to a minimum the friction of circular rollers, he proposes to float the dome by means of an annular *caisson* plunged in a receptacle of the same form, and filled with a liquid which will not freeze, such as an aqueous solution of chloride of magnesium. At the Paris observatory it is quite necessary that some such arrangement as this should be adopted; for the observatory is situate over the catacombs, one result of which has been, that for many years the pillars of the meridian-circle erected in the gardens have gradually inclined toward the east in consequence of the displacement of the soil. With mechanism of this form for rotating the dome, any probable change of level would not prevent the dome from turning.

The magnetic observatory now being completed will be one of the first order. Six subterranean chambers of constant temperature have been built under the best possible conditions of isolation and stability. An outer wall of nearly 2 m. thickness encloses a rectangular space 40 m. in length and 14 m. wide, completely impervious to moisture. The vaulted roof, 1 m. thick, is covered by earth to the thickness of 2 m., and grass and planks protect the soil from the direct rays of the sun and from frost. The observing chambers can be lighted either by gas, or by reflection from without.

Advantage has been taken of the existence of these chambers by placing in them the clocks from which the time is distributed throughout Paris; but, in spite of all precautions, the chambers are found to be not altogether free from minor trepidations resulting from the traffic of the streets. Apparatus has been constructed, and is now ready for use in investigating the vertical and slow movements of the soil. This will be placed in a gallery in the catacombs 27 m. below the surface.

The erection of an astronomical observatory on the Pic du Midi, at a height of 2,859 m., is engaging the attention of the director. At this elevation, it is said to be easy to read at night by starlight alone, and fifteen stars are visible to the naked eye in the cluster of the Pleiades. It is intended that any astronomer who wishes to make any special researches may take advantage of the observatory on the Pic du Midi.

LETTERS TO THE EDITOR.

The right whale of the North Atlantic.

I have noticed in a late number of your journal a criticism on the last Bulletin of the American museum of natural history. Being away from town, I have not access to works referring to the subject of cetology; but with the aid of notes that I have with me, as well as drawings of the subjects involved, I hope to show conclusively that other views than those taken by the critic are the correct ones.

I shall not attempt to justify the carelessness that permits the presence of typographical errors; but, when an *errata* list accompanies a work, it should have due credit for its intentions.

The writer says, "There are errors of statement of so grave a character as to require notice," and continues, "It would seem, for instance, that only the merest novice in cetology could have been misled," etc. — referring to the identity of the St. Lawrence whales.

Lesson wrote, "What an impenetrable veil covers our knowledge of the Cetacea! Groping in the dark, we advance in a field strewn with thorns." I believe that some in later days, not quite novices, admit a degree of unfamiliarity with the great beasts of the sea. In that view, let us see if 'errors of statement of grave character' have really been made.

The president of the Quebec historical society, Dr. Anderson, with Dr. DeKay's Report on mammalia before him, says, speaking of a large whale that had foundered in the St. Lawrence River, "It turned out to be an aged male, apparently the species Balaena mysticetus. . . . The back was black; the belly, furrowed, presenting the appearance of a clinker-built boat. . . . I concluded, after a careful examination, it answered fully the description given by Dr. DeKay for the mysticetus. . . . As the whale lay upon the beach, he was sixty-five feet long; the fluke of his tail was twelve feet; his jaw, fifteen feet."

This whale was noticed primarily by us for the purpose of directing attention to the fact, that such a great form had really pushed into the fresh-water