

ternal influences, and, as might be expected, the neighbourhood of New Guinea has had great effect upon the ethnography. Australian influence, on the other hand, appears to have been very slight, though at least one of the tattoo designs characteristic of the islands has found its way to Cape York. More unexpected is the presence in Mer of a form of shell pendant representing the larva of the ant-lion, which appears to have been introduced by a native of the New Hebrides. The practice of moulding the heads of infants, in the desire to give them a shape so far as possible removed from that of the Australian, seems to hint at some racial antipathy, in spite of the fact that one of the heroic figures of Torres Straits mythology appears to have been a native of Cape York. The harpooning of dugong and the capture of turtle by means of the sucker-fish are treated in full, and are interesting since the methods are

The subject of the degeneration of patterns receives full treatment and is very illuminating, but the section on the names and significance of patterns and designs is disappointingly short. This, however, is due to no fault of the author, but to lack of information. While speaking of degeneration, we may congratulate Dr. Haddon for his ingenuity in discovering that a peculiar ornament, now worn only at dances, is the survival of the spare bowstring carried on the arm by warriors in the bad old days. Of amusements, top-spinning holds first place, and was pursued with such devotion by the natives that, as cricket in Fiji, it had to be limited by legislation. Dr. Rivers's chapter is one of the most complete and extensive discussions of the astronomy of a primitive people which has appeared, and the indications which he gives of the existence of private property in constellations are particularly interesting.

The entirely adequate treatment of such diverse material may be assumed from the unimportant nature of the criticisms made above. It should be added that the illustrations are furnished on the most generous scale, and consist of forty well-printed plates and nearly 400 line-drawings, of which those included in the chapter on textiles deserve a special word of praise. If anything is lacking at all it is perhaps in the binding, since in the particular copy under review the explanation of Pl. XVI. is duplicated, while that for Pl. X. is missing. To speak generally, all that need be said is that no one who sets out to deal with the art and technology of a primitive tribe can find a better model for the presentation of his results than the volume discussed above.



FIG. 2.—Top-spinning, Mer. From "Reports of the Cambridge Anthropological Expedition to Torres Straits" Vol. iv., Arts and Crafts.

LEON PHILIPPE TEISSERENC
DE BORT.

peculiar to these islands. In this connection one would venture to disagree with Dr. Haddon's use of the word "butt" to designate that end of the harpoon-shaft into which the point fits; surely this term can be applied only to the other end.

The native canoe is explained in painstaking detail, and this section would be even more valuable if a sketch-plan of a typical native craft had accompanied it. It might be suggested also that "baler," and not "bailer," is the proper term for the utensil with which canoes are baled. In dealing with the native art, Dr. Haddon is handling a subject of which he has made a particular study, and the result is excellent. Besides purely formal patterns, the figures of fish occur most often in native design, but the people of Torres Straits are noteworthy as having risen in one or two cases to the portrayal of scenery, an accomplishment extremely rare amongst primitive folk.

THE announcement of the death of M. L. Teisserenc de Bort, which appeared in *The Times* of Monday, January 6, will be received with profound regret by meteorologists in all parts of the world, for he was conspicuous among the pioneers in the investigation of the upper air. The history of his connection with that investigation is one of the most encouraging episodes of modern physical science.

Born in Paris on November 5, 1855, the son of an engineer, with ample private means, he began his scientific career in 1880 at the Bureau Central Météorologique as *chef de service* of the department of general meteorology, under the directorship of Mascart. His interests were wide. He spent his vacations in 1883, 1885, and 1887 in the study of terrestrial magnetism and geology in Algeria and Tunis, including the Sahara. In later years his leisure hours were mostly devoted to painting in oils. He remained unmarried.

His contributions to general meteorology while still an official of the Bureau mark him out at once as belonging to the school that regards the treatment of the meteorology of the globe in its entirety as a condition for effective progress. His charts of the distribution of pressure at the level of 4000 metres are a real contribution to the practical study of the general circulation of the atmosphere. They were preceded by studies of the distribution of pressure, winds and clouds, which introduced the idea of "centres of action." They were followed, after he had left the Bureau, by the book on "*La Météorologie dynamique—Histoire de nos Connaissances*," written in conjunction with his older friend H. H. Hildebrandsson, now emeritus professor at Upsala, and by the proposals now represented by the Commission du Réseau Mondial for putting the study of daily weather upon a "world" basis by collecting daily telegrams from about thirty stations distributed over the whole globe.

In 1892 he was excused from further daily attendance at the Bureau Central, and became *météorologiste* to the Bureau, presumably unpaid, and free to work in his own way. In 1896 he founded an observatory for the study of dynamical meteorology at Trappes, on an open plain near Paris, not far beyond Versailles. The first object of the new observatory was to carry out measurements of clouds in connection with the scheme of the International Meteorological Committee for cloud observations in the years 1896-7. That purpose satisfied, Teisserenc de Bort went on to study the upper air by means of kites, in association with his friend Rotch, the founder of Blue Hill Observatory, whose untimely death occurred only last year. His chapter of accidents with stray kite-wires is known to some of his friends, but is not published.

The next stage was a paper in the *Comptes rendus* of June 15, 1908, containing an account of three ascents of sounding balloons, *ballons sondes*, according to the plan suggested by Hermite and Besançon, whereby records on self-recording instruments are obtained from heights up to nearly thirty kilometres in exceptional cases, far beyond the limits attainable by manned balloons. The three ascents of June 8, 1898, had become ninety records by August, 1899, and 1100 records by 1906; and by that time it had been clearly proved that our atmosphere is divided into two shells by a surface at a height of about ten kilometres, just above the level of the highest clouds. In the upper shell, which Teisserenc de Bort called the "stratosphere," there is practically no change of temperature in a vertical column; below that is the lower shell, the "troposphere," the region of vertical temperature gradient and convection. Teisserenc de Bort used balloons of varnished paper, which do not so easily reach great heights as the expanding india-rubber balloons introduced by Assmann; so that the honours of the identification of the stratosphere are divided, but the name is Teisserenc de Bort's.

This achievement secured, his energy and enter-

prise were indeed astonishing. He managed to get corresponding investigations carried out (probably at his own charges) over the Danish seas, in the high latitudes of Sweden, over the Zuyder Zee, the Mediterranean, and subsequently over the intertropical region of the Atlantic Ocean. For the last-mentioned investigation, in the most critical period of the war between Russia and Japan, he bought a Hull "fish-carrier" (after selling his large house in Paris). The vessel was transformed into the s.y. *Otaria*, which was equipped and manned with the assistance of his friend Rotch, and made two voyages to study the currents above the trade winds.

The thermal condition of the stratosphere being more or less settled, Teisserenc de Bort next set himself to determine its chemical composition by capturing samples for analysis from a height of twelve or fourteen kilometres, but as yet no striking results have been obtained.

Teisserenc de Bort was always a delightful companion, and frequently a charming host at international meetings of meteorologists. No one knew better that meteorology is a cooperative science, and no one was more ready to help his colleagues. From 1903 onwards he paid frequent visits to England or Scotland. In the course of one of these visits he formed the acquaintance of Prof. Chrystal, and was invited to give a lecture before the Royal Society of Edinburgh. In 1908 he came to London to receive the Symons medal of the Royal Meteorological Society, bringing with him the first samples of his raid upon the stratosphere. He was never robust, and always most careful, but increasing ill-health kept him away from the meeting of the Commission for Scientific Aëronautics at Vienna in 1912, and he was away from the Time Signal Conference at Paris in October for the same reason. A New Year's card received only last week spoke of exhaustion following enteritis, which has apparently brought to a close at the early age of fifty-seven a career still full of promise, but yet triumphant in its accomplishments. It is only recently that he was elected a member of the Academy of Sciences, for which meteorology has to count as physics, although meteorology is a cooperative science, and physics, as generally understood, is distinctly individualist. But what is of more importance is that, by his maintenance of the observatory at Trappes, Teisserenc de Bort enabled France to keep her place in the front rank of the scientific investigation of the upper air. The provision for the future will be looked for with anxious interest.

W. N. SHAW.

NOTES.

SIR HENRY ROSCOE celebrated his eightieth birthday on Tuesday, January 7, at his country house, Woodcote Lodge, West Horsley. His former students and friends having decided to commemorate the occasion by the presentation of his bust to the Chemical Society of London as a tribute of appreciation of his long life and work, a representative