

de l'héroïque capitaine s'y croisera, au travers d'une large couronne de lauriers, avec le glaive de la grande époque gauloise que l'archéologue a si bien fait revivre." Nor can one abstain from quoting from the circular, which has been sent out by our colleagues in France, the following sentence:—"C'est l'unité d'une carrière riche d'œuvres, plus pleine encore de promesses, que rappellera la légende: GALLIAE RELIQUIAS ILLUSTRAVIT • PRO • GALLIA • MILES • CECIDIT."

There is not a British archaeologist or anthropologist who is not indebted to M. Déchelette, and I am certain they will be only too glad to participate in a movement which has been rightly initiated by their French colleagues. Subscriptions should be sent to M. le Comte O. Costa de Beauregard, Sainte-Foy, par Longueville (Seine-Inférieure). Those sending a subscription of 10 francs are entitled to a replica of the plaque in bronze, those giving 50 francs to one in silver, and those giving 80 francs to one in enamel, should they so wish.

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A Sunset Phenomenon on July 22.

AN interesting sunset phenomenon was visible here at 8.10 p.m. G.M.T. on Saturday last, July 22. Two very well-marked dark bands were seen rising from the south-eastern horizon across the pale pink counter-glow. On the north-western horizon the tops of two very distant cumulo-nimbus clouds were visible, the tops being about half a degree above the horizon; the clouds were dark against the sunset, but their upper edges were bright. The dark bands were the shadows of these clouds projected right across the sky. The shadows could be followed for some distance from the clouds, but were not visible in the plane at right angles to the direction of sunset. They were visible for quite ten minutes after I first noticed them, by which time the twilight arch was some way above the horizon and the dark bands rose from it. The two cumulo-nimbus clouds and a small patch of cirrus were the only clouds visible; their bearings were 302° and 305° respectively. An inquiry by telephone elicited the fact that no clouds were visible at Benson Observatory, and the cumulo-nimbus must have been at a great distance. It would be of some interest to know this distance, and I should be very grateful to any readers of NATURE in Herefordshire, Wales (especially Anglesey and the west coasts), and any part of Ireland roughly between Co. Dublin and Sligo and Donegal Bays, if they could let me know the character of the weather at the time mentioned, whether any cumulo-nimbus clouds were noticed, and especially if rain or thunderstorms were experienced, or even merely whether the sky was clear or cloudy. I fear the weather of a week ago is not often remembered, but it is possible that some of your readers may recollect it or have recorded it.

Had the clouds been more numerous the shadows would have encroached more on the sunset glow and on the counter-glow, and the appearance would have resolved itself into crepuscular rays, the explanation of which has been a matter of some discussion.

C. J. P. CAVE.

Meteorological Office, South Farnborough, July 24.

Silvanus P. Thompson as a Painter.

THE late Prof. S. P. Thompson was a man of such extraordinary versatility and power that his artistic side was scarcely done justice to in the Press. It

may therefore be interesting to put on record what our friend, George Flemwell, the well-known painter, naturalist, and writer, living in Switzerland, says in a letter from Zermatt:—

"To my mind enough has not been said of his power for rendering ice in water-colour. I knew nobody to touch him in the painting of glacier ice at close quarters." (I believe Mr. Flemwell, himself a distinguished painter of Alpine scenery, has seen little of Edw. Compton's work.) "And his method was, considering the excellence of the result, the simplest and most direct I have ever seen. With the utmost care he worked with great quickness and facility. A few simple washes, and there was the ice: its form, its structure, and its quality. His values were right and his colour clean; he got the body and substance of the glacier. I am happy to think I have two or three pencil sketches I made of him when he was working on the Glacier d'Argentière and at the Mer de Glace; and I was with him when he painted the original of the Christmas-card of which you speak. . . ."

H. S. T.

Bristol, July 17.

The Utilisation of Waste Heat for Agriculture.

MR. C. TURNBULL'S scheme (NATURE, July 20, p. 422) for artificially heating the soil, if feasible, would tend to encourage the insect pest. As all farmers and fruit-growers are aware, this has of recent years increased to an alarming extent. But for the seasonal lowering of the soil temperature it would become more serious still.

C. CARUS-WILSON.

Casterton, Kirkby Lonsdale, July 22.

THE INDIAN BOARD OF SCIENTIFIC ADVICE.

THE Report for the year 1914-15 of the Board of Scientific Advice for India consists almost entirely of isolated summaries of the work done during the year by the several scientific departments and scientific institutions of the Indian Government. As most, if not all, of these departments and institutions issue independent annual reports of their own, it is, to say the least, disappointing to find these technical summaries filling the report of a scientific body styled advisory; unless, indeed, the term "advice" be understood in the commercial or notificatory sense as merely indicating the existence in working order of these various departmental instruments of research.

The advisory proceedings of the Board occupy only thirty-seven lines of the 180 pages of the report, and all the information they afford is that the Board accepted the programmes of the several scientific departments, but would rather not have them in so much detail in future; and that it recommended (a) that officers attending the next Indian Science Congress should be regarded as on duty, (b) that a catalogue of scientific serials prepared by the Asiatic Society of Bengal should be published at the expense of Government, and (c) that experiments should be undertaken, as requested by the Punjab Veterinary Department, to determine the vitality of rinderpest virus under Indian conditions—all three mere departmental

matters that scarcely need to be referred to a special advisory board.

Of any far-reaching advisory purpose, of any great original directive enterprise, of anything in the nature of spontaneous movement, this report shows no record; one looks in vain for any reference to scientific education, or even for a connected account—as contrasted with bald, disjointed departmental summaries—of the general progress of science in India, vital affairs in which a Board of Scientific Advice might be expected to exercise a missionary influence, if not to take a commanding lead.

The simple fact is that, so far as the advisory business goes, this Report of the Board of Scientific Advice for India is a document of the *ex officio* genus; and it can scarcely be otherwise when the President of the Board is merely an *ex officio* hierarch of the Indian Secretariat, instead of being a man of science specially selected for his critical knowledge of scientific affairs.

ELIAS METCHNIKOFF.

ONE of the most remarkable figures in the scientific world passed from among us on July 15. Elie Metchnikoff, as they wrote his name in France, his adopted home, stands out as the type of a gifted, indefatigable investigator of Nature who, in accordance with his beautiful and earnest character, never faltered in his career, but from his boyhood onwards devoted himself to the minute study of animal life, and by a natural and as it seemed inevitable process passed through the study of the microscopic structure and embryonic growth of simple marine organisms to the investigation of human diseases and his great discoveries of the nature of the process known as inflammation and of the mechanism of "immunity" to infective germs and the poisons produced by them. By every zoologist in the world he was especially honoured and revered; for it was to him that we owed the demonstration of the unity of biological science and the brilliant proof of the invaluable importance to humanity of that delightful pursuit of the structure and laws of growth and form of the lower animals which he and we had pursued from pure love of the beauty and wonder of the intricate problems of organic morphology.

Just as his chief and friend, the great Pasteur, was privileged to proceed directly and logically in his own life's work, by his genius and insight, from the discovery of astonishing new facts as to crystalline structure—which seemed to have no bearing on human affairs—to the understanding (by the aid of those discoveries) of fermentation and infective disease; so did Metchnikoff himself both discover the activity and universality of the organic cell-units which he called "phagocytes," and at once proceed to demonstrate their prime importance in the process known as inflammation and the understanding of "immunity," which has revolutionised medical theory and practice.

Elie Metchnikoff was born in 1845 at Ivanavka, near Kharkoff. His father was of Moldavian

ancestry and an officer of the Imperial Guard, from which he retired with the rank of major-general. He was devoted to the pursuits of a country gentleman, among which horse-racing was his special favourite. He had no tendencies to scientific study. Elie's mother, whose family name was "Nevakovitch," was a Jewess. He owed his mental gifts largely to her. From childhood he showed a strong taste for the study of Nature. After passing through the high school of Kharkoff he entered the university at the age of seventeen and completed his degree examinations in two years, when he went off (in 1864) to Germany for further biological training. He had already, in 1863, when he was only eighteen, published a paper in Reichert's *Archiv* on the stalk of *Vorticella*, and another on the nematode *Diplogaster*. In 1864 he published some observations on the Acinetarian *Sphærophrya*. After a brief sojourn in Heligoland he went to work in Leuckart's laboratory at Giessen, and accompanied the professor to Gottingen when the latter was promoted to that chair. In Leuckart's laboratory he worked at the parasite of the frog, *Ascaris nigrovenosa*, and made the important discovery of the fact that the hermaphrodite parasite of the frog's lung hatched from eggs gives birth viviparously to a free-living generation of males and females. This he published in 1865 in Reichert's *Archiv*, and a translation of his paper appeared in the *Quarterly Journal of Microscopical Science* in 1866. Leuckart claimed to have made the discovery "with the assistance of Herr Mecznirow," but Metchnikoff briefly stated that this was erroneous and that he alone had done the work in the absence of Prof. Leuckart and without his aid or suggestion. Naturally this terminated their friendly relations. In the same year he published some notes on those little-known microscopic animals, *Ichthydium*, *Chætonotus*, *Echinoderes*, and *Desmoscolex*. This also was translated for the *Quarterly Journal* in 1866, and thus I became familiar with his name and the interesting character of his work, though I did not make his personal acquaintance until twenty-two years later, when (in 1888) Pasteur introduced me to him in his laboratory in the rue Vaugirard.

These papers were rapidly followed in 1866 by others showing his first-rate powers of accurate observation and originality, viz. on a European land Planarian; on the development of *Myzostomum*, the ecto-parasite of the feather-star, which he showed to be a modified *Chætopod*; on insect embryology (*Hemiptera* and *Diptera*); on the remarkable new rotifer, *Apsilus lentiformis*; and on the viviparous reproduction of the larvæ of the fly *Cecidomyia*. Then he sojourned for a time (1867) at Naples (before the days of Dohrn's Zoological Station) and wrote on the embryology of the cuttle-fish *Sepiola*, on the strange marine forms *Chætosoma* and *Rhabdogaster*, and in 1869 on *Tornaria* (which he showed to be the larva of *Balanoglossus*) and on the embryology of *Echino-*derms and of jelly-fish.

In 1870 he was appointed professor ordinarius