

practice, we are assured, has already resulted in a very marked diminution of the schools of fish in that vicinity, and has been greatly resented by the people of the State, who are endeavouring to drive the operator from its waters.

AN earthquake at Arequipa in Peru, on the 21st December, was strong, and is said to have lasted fifty or sixty seconds. It was attended with much subterranean noise.

AN earthquake shock was felt at Bombay and as far north as Baroda on the night of January 31. It was distinctly noticed over a large area, but did little or no damage.

RECENT telegraphic advices from Havana announce that Captain Selfridge, who is engaged in prosecuting the Darien ship-canal exploration, thinks he has discovered a practicable route over a line where the elevation of the divide is not more than three hundred feet above the level of the sea. The despatch is dated Paya, on the Tuira River, a stream which empties into the Gulf of San Miguel, on the Pacific.

THE well-known Pinang or Betel nuts, the seeds of *Areca catechu*, a handsome palm cultivated in all the warmer parts of Asia, and used by the natives to chew with lime for the purpose of producing a gentle kind of intoxication, form an important article in the interior trade of the Malayan Archipelago, being exported from Sumatra to other islands in large quantities. The exports from Padang alone in one year amounted to 5,057 piculs.

FROM the twenty-sixth Report of the Proceedings of the Calcutta School-Book Society, we learn that during the two years 1868-1869, more than 179,300 rupees was spent in purchases of books for distribution among the natives, the object of the society being "to supply and distribute, at the lowest possible price, a healthy household literature in the vernacular tongues," in which it is assisted by a small monthly grant from Government. The titles of some of the works circulated sound to us peculiar, as "A Treatise on Spiritualism and its Manifestations," "A Drama against Upstarts," "The Grief of Females on the Departure of their Husbands by Rail on Monday," &c. ; while the modicum of science given is very small ; and, judging from the titles, we should suppose that the instruction in natural and physical science, thought good enough for the natives of Hindostan, is about on a par with that which prevailed in this country in the time of Oliver Goldsmith.

THE Berwickshire Naturalists' Field Club, the oldest society of the kind in Britain, has issued its "Proceedings" for 1870. Besides one or two archæological papers, and an address from the President, the Rev. G. S. Thomson, we have the following contributions to Natural History and Ethnology, chiefly connected with these branches as represented in the district :—"The History of the Wolf in Scotland," "Turnip Insects during 1870," "Botanical Notices," and "Contributions to the Entomology of the Cheviots," chiefly in coleoptera ; all these from Mr. James Hardy. The Secretary, Mr. George Tate, contributes a carefully worked-out paper on "The Stature, Bulk, and Colour of the Eyes and Hair of Native Northumbrians ;" and Mr. Ralph Carr treats of "The Northumbrians between Tyne and Tweed." There are several other short papers of local interest, and a statement of the rainfall concludes the number.

IN a discussion at the Indian Conferences at the Society of Arts, as to a proposition of Col. Wragge to employ Neilghery peat on railways, it was mentioned that the two largest peat bogs near Ootacamund have been swept away in rains. This was alleged to be through cutting them at the wrong end.

WE learn from Nicaragua that the river and port of San Juan del Norte are shoaling in many places. Where there was deep water in the latter ten years ago, there is now a bank above the surface.

#### ON THE CONNECTION BETWEEN TERRESTRIAL TEMPERATURE AND SUN-SPOT PHENOMENA

MR. STONE, the newly-appointed Astronomer Royal at the Cape of Good Hope, has recently communicated to the Royal Society an important paper and curve, in which the thermometric observations taken there since 1841 are discussed. This curve he has compared with another constructed on Wolf's observations of sun-spots, and with the following result, which we give in his own words :—

"The agreement between the curves appears to me so close that I cannot but believe that the same cause which leads to an excess of mean annual temperature leads equally to a dissipation of solar spots. There is on the whole a curious appearance of logging of the inverse curve of solar spots over that of temperature. At the maximum about 1856, this, however, does not appear to be the case ; but when the uncertainties of the data, both of the solar spots near the minimum, and of the mean temperature also, are taken into account, such discrepancies might perhaps fairly be expected, even if there be a physical connection between the two phenomena as results of some common cause. If there be a sensible inequality in the mean temperature with a period of about ten years, then the mean temperature resulting from the observations in the temporary observatory, which were made near a maximum, will be too high. The corresponding ordinates, therefore, will be depressed too much relatively to those corresponding to observations made in the other two observatories. In the curve 2 I have imperfectly corrected the mean of the results for the temporary observatory on the supposition of such an inequality existing. The only result of such a correction is to modify the curve at the points of junction of the observations made in different positions. The general form is unaltered. It should be mentioned that the point about which the curves appear to differ most is near or at the change of exposure from the original observatory to the temporary shed about 1852.

"I may mention that I had not the slightest expectation, on first laying down the curves, of any sensible agreement resulting, but that I now consider the agreement too close to be a matter of chance. I should, however, rather lean to the opinion that the connection between the variation of mean temperature and the appearance of solar spots is indirect rather than direct, that each results from some general change of solar energy. . . . The problems of meteorology appear to be presented here in a simpler form than in England, and probably systematic photographic self-registering observations extended over a few years might lead to important results."

#### EXPERIMENTS ON CERTAIN VIBRATORY PHENOMENA

THE apparatus made use of consists simply of a cardboard disc furnished with radial slits, and which can be rotated with any desired velocity. To examine a coal-gas flame singing in a glass tube, the disc is placed in front of the flame, and the eye placed where the slits pass in a vertical position. When the disc rotates with such a velocity that the interval between two slits passing the eye is just equal to the period of a complete vibration of the flame, the flame appears to be motionless ; but if the velocity of the disc be slightly reduced, the flame is seen slowly to go through its changes of form, appearing to consist of a series of puffs, resembling those from the funnel of a luggage locomotive. When the interval between the passing of the slits is equal to, or is one-half, one-third, &c., of the period of vibration of the flame, a singular appearance of a phantom disc is seen, having as many or twice or three times the number of slits really in