

Distance in feet at which the Army test-dots were distinguished	English agricultural and out-door labourers, age 16 to 45 years. No. of obs.	Solomon Islanders, age not stated. No. of obs.	English agricultural labourers, &c., age 21 years. No. of obs.
5 to 10	1	—	—
10—15	1	—	—
15—20	4	—	1
20—25	8	—	1
25—30	15	—	1
30—35	29	—	2
35—40	34	1	3
40—45	27	0	3
45—50	40	0	8
50—55	55	7	11
55—60	52	2	8
60—65	40	7	4
65—70	40	3	2
70—75	20	2	2
75—80	9	—	1
80—85	3	—	1
85—90	2	—	—
90—	5	—	1
Total	385	22	49
Average	52·1	57·5	52·5
Mean	55·0	55·0	52·5

\* Mean or value of greatest frequency.

Mr. Guppy's figures are too few in number, and too irregular in their relation to each other and to the columns of figures on either side of them, to be accepted as representative of the range of vision of the Solomon Islanders, and he must have stumbled on some of the better examples, or else the short-sighted men have not presented themselves to him for examination. Nevertheless, taking the figures as they stand, they give no support to the belief that savages possess better sight than civilised peoples. Mr. Guppy gives 60 feet as the distance at which the test-dots were distinguished, but the average of his figures is 57·5 feet, or only half a foot more than Prof. Longmore worked out, from observations on British recruits, as the distance which the test-dots ought to be seen in good daylight. Judging from the run of the figures, I should place the so-called "normal" vision of the Solomon Islanders at 55 feet, or possibly at 52·5 feet, like the English labouring classes of the age of twenty-one years, as our figures representing that age are remarkably uniform in their distribution, and therefore near the truth. The average of the Solomon Islanders is, it is true, higher by 5 feet than the English in my table; but this is obviously due to the absence of observations on the less perfect-sighted individuals belonging to the former race. Even when the test is one of seeing objects at the greatest distance, the best savages are inferior to the best English by about one-third. Mr. Guppy evidently believes that the Solomon Islanders possess very superior sight compared with ourselves, especially for distant object; and Mr. J. A. Duffield, who read a paper recently, at the Anthropological Institute, on the natives of some adjoining islands, was still more firmly of this opinion; but it is obvious that the question cannot be decided by general impressions, nor by the result of comparisons with sight the value of which we are ignorant. Travellers naturally record cases in which their own sight (which they believe to be good, but which may be very bad) is outstripped by savages, but do not encumber their pages with negative evidence of the kind. Their mistake lies in confounding acuteness of vision with the results of special training or education of the faculty of seeing—results quite as much dependent on mental training as on the use of the eyes.

Bolton Row, Mayfair, April 13

CHARLES ROBERTS

#### Far-sightedness

ALLOW me to corroborate the report of your correspondent, whose letter appears in NATURE of April 2 (p. 506) as to the visibility of very distant terrestrial objects. In the spring of 1837 I was travelling from Rome, northwards, by "Vetturino," and from the summit of the Apennine on the road between Florence and Bologna, I saw, with astonishment, the whole range of the Swiss Alps, not merely distinguishable but conspicuous. Measured on the map in a direct line the nearest

part of the range was distant about 200 miles. The extreme portions, including Mont Blanc, were considerably more. I have no doubt that the atmospheric conditions were unusually favourable. For when I asked the Vetturino what mountains they were, he, having often passed that way without seeing them, said they were nothing but clouds. I told him that I knew a snow mountain when I saw it; and as a peasant, living on the spot, shortly passed, I renewed my inquiry—to which he immediately answered, to my surprise, that they were the mountains of Switzerland.

J. HIPPLEY

Stoneaston, April 7

ON September 3, 1874, from the Piz Muraun, near Dissentis, I saw the white dome of Mont Blanc, distant about 110 English miles. As the Piz Muraun is only about 9500 feet I was sceptical, till a reference to maps showed a line of intervening depressions. I feel sure that some Alpine tourists will be able to furnish Herr Metzger with cases of mountains identified at distances vastly exceeding this of mine.

E. HILL

Cambridge, April 8

#### The Pupil of the Eyes during Emotion

IN connection with the above subject the following experiment may be of interest to your readers. It is one I made many years ago when studying the border-land between physiology and psychology. At that time I showed and explained it to a number of my friends.

In this experiment it appears to the observer as if I had control over the muscles of the iris, as I can make the pupil of the eye large or small at will. Placing myself in front of, and looking towards, a window or other bright light, the observer is desired to watch the pupil, and say when to contract or expand it. On the order being given, the pupil is seen to expand or contract as desired. This experiment can be easily made by any one in the following manner:—The eye is directed towards the light and a point looked at, the eye being kept steady during the whole experiment. Under these conditions the bright light causes the pupil to contract automatically, and when desired to expand it all that is necessary is to take the attention away from the eye and fix it on some other part of the body—say, by biting the tongue, pinching the arm, &c. By these means the sensitiveness of the retina is, for well-known reasons, reduced, and the pupil automatically dilates. To cause it again to contract, the mind has simply to be recalled to the eye and attention given to the visual impressions.

This experiment supports the explanation given by Dr. Herdman in Mr. Clark's letter in NATURE, vol. xxxi. p. 433, and also the explanation given by Dr. Wilks at p. 458. When the mind is under the influence of fear, the energies are diverted from the eyes and the pupils dilate on account of the reduced sensitiveness of the retina. While in anger, sight being powerfully called into action, the sensitiveness of the retina is increased and the pupil automatically contracts, so that generally we might expect that during those emotions in which the eyes are called into action the pupils will be small, and that when the nervous energies are directed away from the eyes to other centres, the pupils will be large.

JOHN AITKEN

Torquay, April 8

#### Notes on the Geology of the Pescadores

DURING a stay of two days in Making Harbour in 1877, I collected a few notes on the geology of this small group, which has, from its recent occupation by the French, been brought before the notice of the public. These islands, which were briefly described in the last number of NATURE (p. 540), have a characteristic appearance, being flat-topped, 100 to 200 feet in height, and presenting a rather barren aspect from the scarcity of trees and shrubs. Dampier, who visited them in 1687, described them as "much like our Dorsetshire and Wiltshire Downs," producing "thick, short grass and a few trees," a description equally applicable at the present day.

As far as I could ascertain, the whole group was of basaltic formation, the columnar structure being well developed, columns 30 to 40 feet high being observable in the faces of some of the cliffs. In the places I visited the cliffs were built up of two basaltic streams superimposed, the two masses towards their junction being scoriaceous and amygdaloidal, and separated by a layer three inches thick of a red, soft rock or laterite. The